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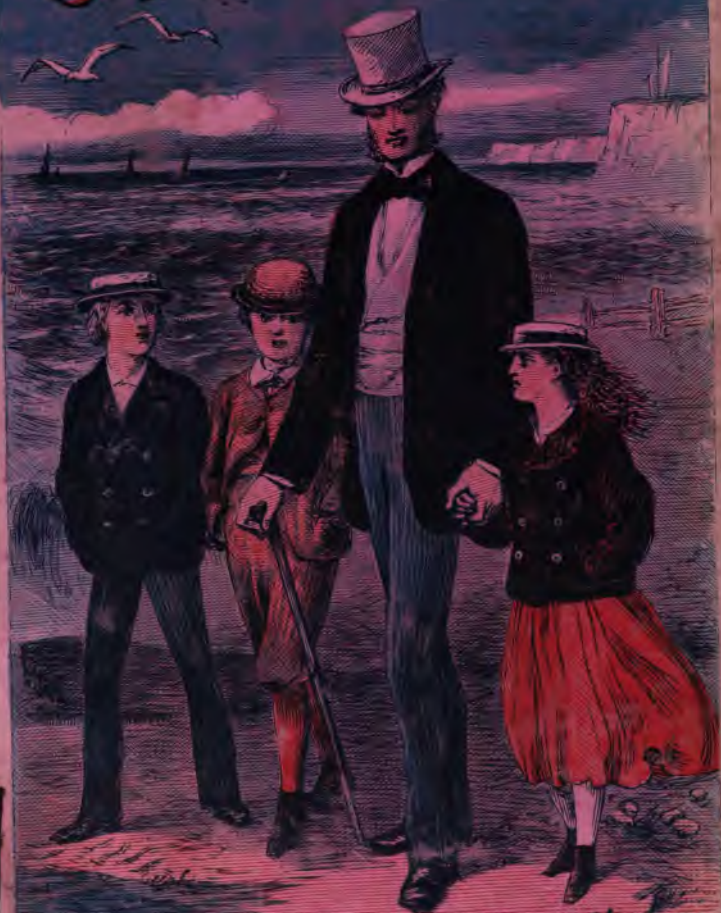
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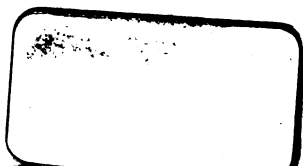
CHATS BY THE SEA

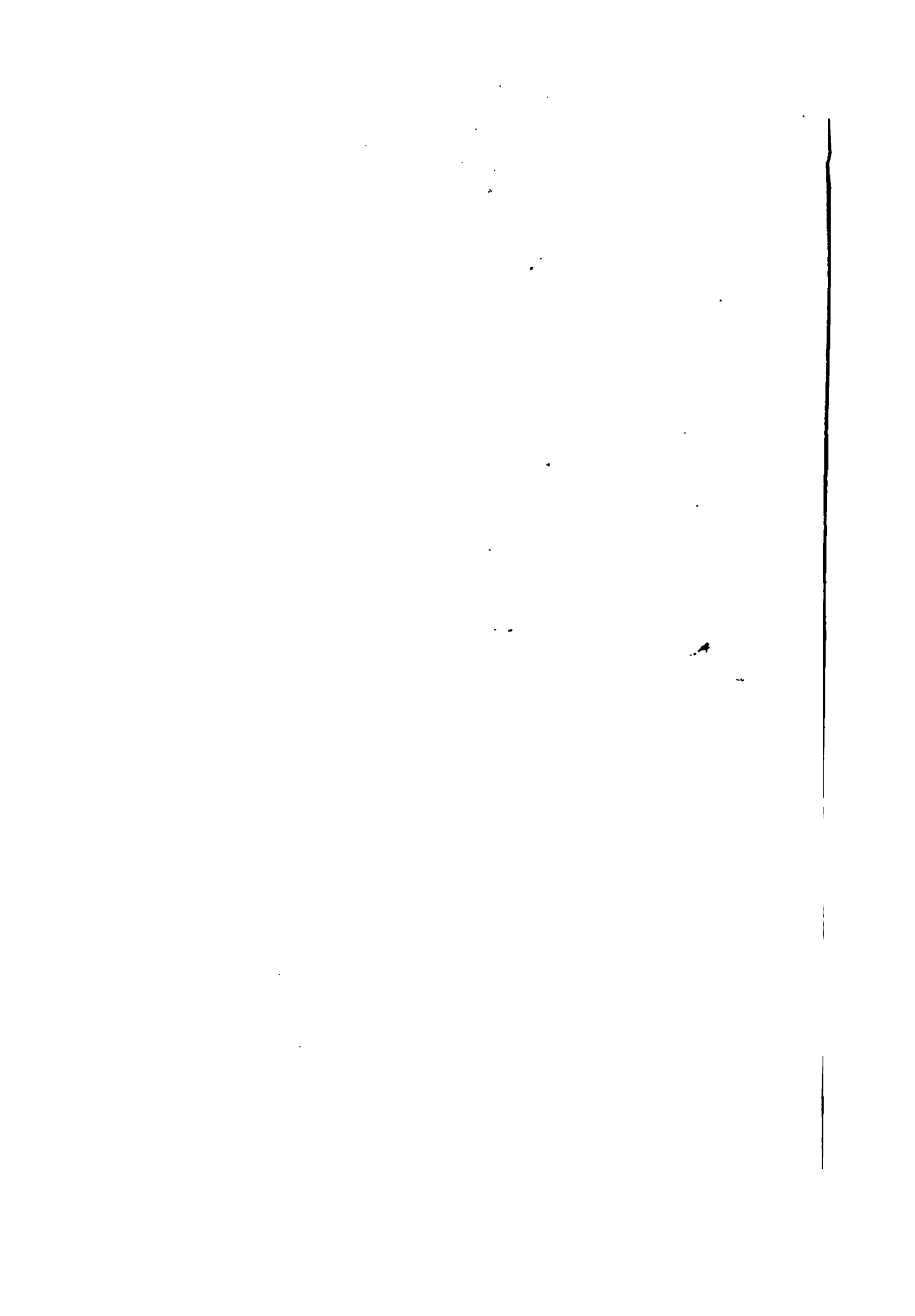


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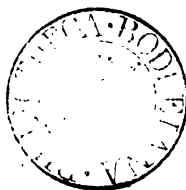


CHATS BY THE SEA.

BY

MARIANNE FARNINGHAM,

AUTHOR OF "LIFE SKETCHES," "LITTLE TALES FOR LITTLE
READERS," ETC., ETC.

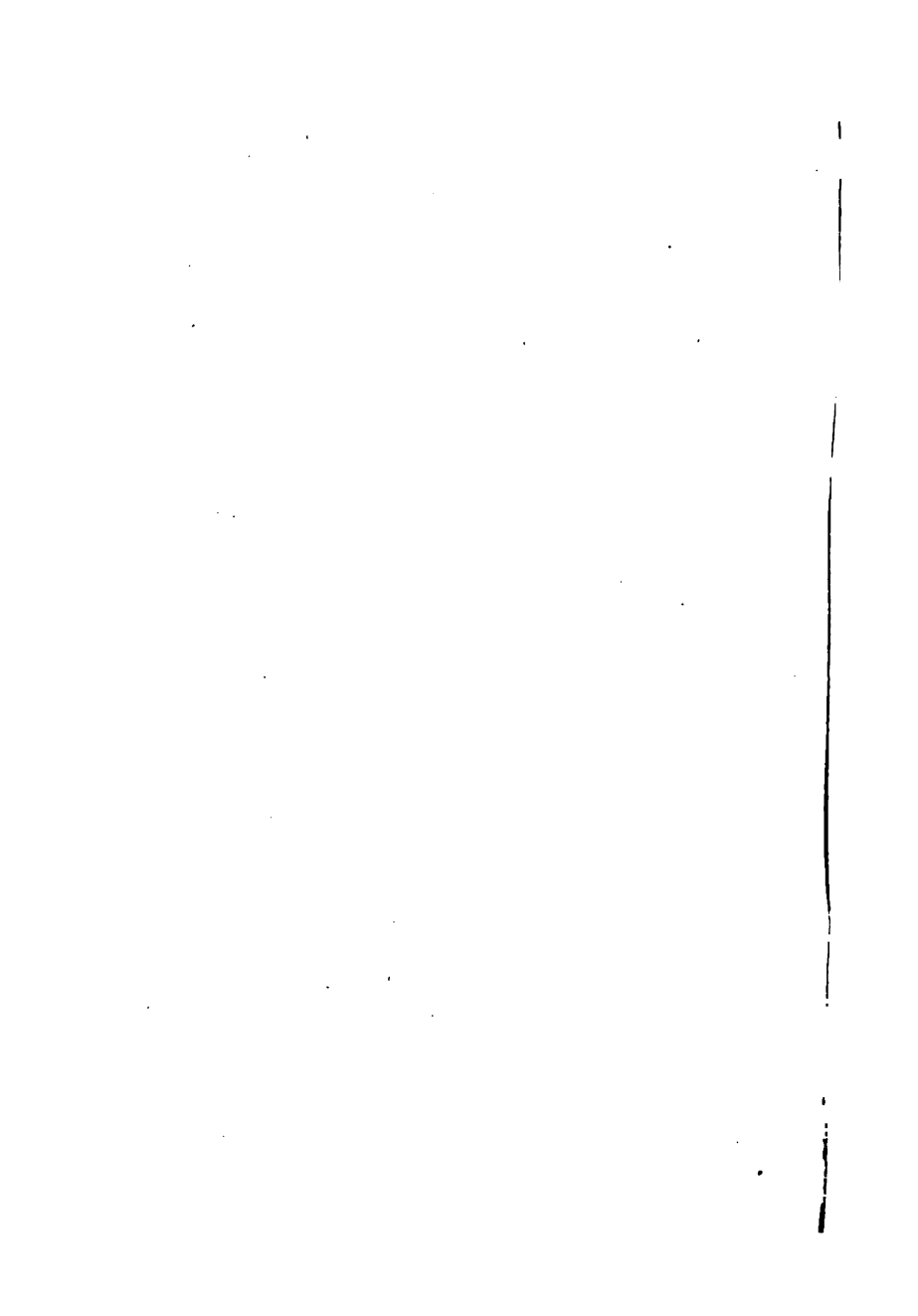


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CHATS BY THE SEA.

CRUSTACEA.

HARRY, George, and little Nell had been invited by Uncle John to spend a few weeks by the sea-side. Uncle John loved to teach as well as amuse, so he told them the first morning that they would talk about *Crustacea*.

"What a long word!"

"It ought to be quite familiar, though, to boys who bring home prizes from school, and consider that they have become so clever as to deserve a holiday by the sea-side. What does it mean, Harry?"

"It is from the Latin *crusta*, and is given to those fishes which are covered with a hard case of crust or shell."

"Let us look for some. Ah! we have not long to wait. Look, Nellie; what are these?"

"Little crabs. Oh! how fast they move! And some of them seem to be walking sideways, some backwards: they will all be off in a minute. Will they hurt me if I take them up, uncle?"

"No; they are all small. It would not be safe, though, Nellie, to put your hand into a hole where a larger crab had taken up his abode, or he might seize it in his claw, and keep it there some time. The best way to disengage your hand would be to break off the other claw; but you had better take care of your fingers, and not put them into dark holes or clefts in the rocks. Those boys yonder are catching them; but you see they have iron hooks, which they thrust into the holes in the rocks."

"Is that how the large ones which are brought to market are caught?"

"No; the very large ones are obtained by means of baskets which are placed in the water, made something like mousetraps. The crabs get in easily enough, but once in they cannot get out."

"Do crabs swim at all?"

"Not this common kind. If we throw this one in the water, you will see it flounder about most uncomfortably. They like to be where there is something for them to catch hold of. But there are crabs which can swim. We may perhaps find a velvet fiddler. That will be able to swim, because its hind legs, instead of being sharp and rounded, as in the common crab, are flattened at the end, so that they can be used like the oars of a boat; and the fiddler can move himself rapidly through the water."

"Why is it called a fiddler?"

"Because it moves its limbs in a manner similar to that in which a person playing a violin would move his arm."

"Here's a curious creature, uncle; what is this?"

"A soldier crab. This name has been given to it because it is very quarrelsome and fond of fighting."

"It has a different kind of shell on its tail?"

"Yes; that does not belong to it. Naturally this crab has no covering on its tail, so it does what you do—tries to cover itself with what it can find. It pushes its tail into any shell that happens to come first."

"I wonder the water does not wash the shell off, as it may not always fit him tightly."

"Most likely it would do so, but at the end of his tail is an instrument very like a pair of pincers, with which it holds the shell on firmly."

"Are these crabs, uncle? They look more like spiders."

"They are called spider crabs, because of their sprawling legs. There are several kinds to be found, but the best time for catching them is during the spring tides."

"What are those black things in that basket, uncle?"

"What do they look like, George?"

"They are like lobsters, only not nearly as pretty."

"They are lobsters. When they are boiled they will be as red as that one we had for breakfast."

"Are the lobster's legs of any use to it?"

"Oh! yes; it walks upon them, unless it wishes to go backwards, and then it shoots itself through the water by its tail."

"This lobster has odd claws, uncle."

"Ah, Nellie! I am afraid it has been' quarrelling, and lost one. You see it grows again quite natu-

rally. The lobster itself casts off the injured one. Another curious thing about the lobster is, that when it gets too large for its shell, it disengages itself from it, kicks it off, stomach and all, and then creeps away to some quiet spot beneath rocks and so on, and waits until a new shell is formed over its body. Otherwise, in its defenceless state, it might be snapped up by other hungry fishes."

"Does it break the shell getting out, uncle?"

"No. Although, as you see, the shell fits quite tightly, yet when the lobster has disengaged itself from it it looks just the same shape and size as when it was covered over the lobster. It swells itself to an unusual size, and in some way cracks the inner part of the shell."

"It must be hard work."

"Yes, it is. The lobster trembles very much, and seems quite exhausted by its efforts."

"The claw is the best part for eating; is it not, uncle?"

"Yes; and yet it is frequently cast, not only the shell, but the whole limb. The lobster tosses it off if it is suddenly frightened. When a limb is injured it amputates it—not at the injured place, but above it—at the next joint."

"Is the tail part of the lobster always bent under the other?"

"No; the natural shape of it is straight. It is so curled by the boiling. It curls itself, though, in any sudden emergency: and as in that form it can move itself by one stroke more than twenty feet, it is enabled frequently to escape from its pursuer, the

more so as it has compound eyes and wonderfully good and clear sight."

They were interrupted by an exclamation from little Nellie,—

"Oh, uncle, here's a number of grasshoppers!"

"Grasshoppers on the *sand*, Nellie? Nay, boys, you needn't laugh; run and catch a few that we may look at them. Ah! you see they are as difficult to catch as butterflies, and spring up in the air very much as grasshoppers do. Often along the shore a footstep turns them up in crowds, and they are seen skipping about in all directions, but mostly toward the sea, where their safety lies. Sometimes they are so numerous, and they throw themselves so high into the air, that they look almost like a cloud. They are called sandskippers, or sandhoppers. How many have you caught, Harry?"

"Not one, uncle; just as I thought I had trapped him beneath my cap, off he jumped out of my sight altogether. They are well named, for they can skip and hop to perfection."

"While we are talking about crustaceous fishes, we must not forget our little favourite shrimps and prawns, for they belong to the same family. These little red ones, which are often called shrimps, are in reality prawns. The real shrimps are the brown ones, or, as the fishermen call them, sand-raisers."

"Why do they give them that name?"

"Because they dig little furrows in the sand, and bury themselves in them so dexterously that the cloud of sand they raise falls upon them, nearly hiding them altogether from view."

"How do they catch shrimps, uncle?"


"By means of a net, which is dragged along the bottom of the sea. This frightens them, and, in their hurry to escape, they rush into the net and are captured and brought to land. As the tide ebbs we shall find plenty of small ones in the holes on the rocks where the water lies, and take some home; though they are more fit to stock an aquarium than to eat, as most likely those we find will be small. Nearly all animals that live in the sea are fond of shrimps; so that many of them are unfortunately eaten."

"Prawns are prettier things than shrimps."

"Yes; and they are much prettier before they are boiled. Their bodies are almost transparent, and covered with most beautiful and delicate colours. Their eyes are also very bright and glowing. But enough of crustacea for the present. Now, George."

But George was tossing up his cap, shouting, "Hurrah for the sea-side holidays!"

SHELLS.

“ ON'T you think we had better begin to collect our shells, uncle? Mamma will like some, so will Lucy; and if we can find any rare specimens, I shall be glad to take them to school when I return.”

“ Well, Harry, set to work this morning. As the tide is ebbing your search will probably prove successful. Ah, Nell has found some already.”

“ Pooh! they are only cockles. Who cares for them? I dare say we may find pints of them any day.”

“ Well, young gentleman, and are they to be despised because they are plentiful? Who cares for boys? You could pick up cartloads of them any day.”

There was a general laugh at this, Nell clapping her hands for very glee.

“ But if you look at these cockles you will find that some of them are very prettily marked, and the fishes that live in them are both curious and interesting. They live in the sand. You may think it a strange kind of life; for they are quite buried, and, what is more, they actually dig their own graves. Look here; you see these little fountains of

sand and water spurting up,—they are caused by the cockles. When Nell digs a hole with her wooden spade, you know she comes to the water very soon; so do the cockles, and they throw up these little jets. The shells that you find are nearly all empty; but it would be amusing to watch live cockles, for they not only dig in the sand, but they also jump in the air."

"How tightly this shell is stuck to the rock! I can't move it, uncle: can you?"

"That is a limpet. It is able to stick tight, because of the atmospheric pressure. Besides that, it has most likely remained in the same place so long, that the shell has grown almost into the rock. The limpet is by no means a wanderer; it remains so long in its place that other things grow over it."

"What are those, uncle?"

"Whelks. You can find plenty of them, larger and better than these. There is another shell very similar to the whelk, from the inhabitant of which the natives used to obtain the purple dye which was thought so much of. It is called the *purpura*. It was not very easily obtained, this purple; for each fish contains only very little indeed. Besides, it was some trouble to get it, several preparations being needed. The colour at first looked like yellow."

"I wonder if it came up to our purple, or magenta, or mauve?"

"No; I fancy Nellie's dress is far more beautiful than anything they could ever produce."

"Some of these periwinkles are very pretty, uncle."

"Yes; especially the yellow periwinkle, which is

very prettily marked,—not only the shell but the fish itself.”

“Here’s a little beauty, uncle.”

“That is the cowry. It is very small, but very pretty. Some of the same kind found in other seas are very large though; and some are smaller even than this. If you lived in some countries, you might earn a little pocket-money by picking up these shells. I’m afraid that you would be soon tired though; for it would take about fifteen hundred cowries to make a shilling’s-worth.”

“Ah! I would rather write a note to papa than gather cowry shells.”

“Here are some pretty little shells on this seaweed; but they are nearly all broken.”

“George, what do they remind you of?”

“They are something like peg-tops.”

“They are called tops because of this similarity in shape. Some of them are very beautiful. The livid top is, perhaps, the most so. The fish itself has a very beautiful tongue.”

“Shall we have some mussels for tea, uncle?”

“We may succeed in finding plenty, Harry, but it will be very unwise to eat them.”

“Aren’t they good to eat, uncle?”

“Some are, Nell, but some are poisonous, and we will not run the risk of being ill during our sea-side holidays.”

“Here is a little fan-shaped shell, uncle.”

“That is a scallop. But the fish is even prettier than the shell. If we could find one with the shell partly open we should see a row of little bright

points, which, for aught we know, may be eyes. Can either of you tell me where Compostella is ? ”

“ It is a town of Galicia, in Spain. ”

“ In Compostella is the shrine of St. James, to which many pilgrims have resorted. The history of St. James is in some way connected with scallop-shells. At one time the pilgrims who had visited the shrine used to wear a scallop-shell in their hats, in memory of the same, and they were even so proud of it that they bore it upon their coats of arms. ”

“ Please, uncle, what is a wentletrap like ? I am trying to find one. ”

“ The wentletrap is a very pretty shell, long, round, and tapering. There are two kinds,—one which is called the Royal Staircase Wentletrap, was at one time thought so much of, that one only about two inches high would fetch seventy or eighty pounds. ”

“ Would they be worth that now, uncle ? ”

“ No ; they are not so rare as formerly. ”

“ I would rather find them than cowries. ”

“ What is this long narrow shell, uncle ? ”

“ That is one side of a razor-shell. ”

“ It is very much like a razor in shape and size. ”

“ The razor-fish, or solen, is one of the burrowers. It can even go deeper into the sand than the cockle, but it likes the edge of its tube to remain just above the sand. You would be amused to watch the fishermen trying to catch this little creature. It is so active that I can assure you he is obliged to exercise some skill. He watches for the little jets of water which it tosses up, and then pops an iron hook into

the place. But if he does not catch it the first time, he knows it is no use trying again for that one: it is off out of his reach more quickly than he can follow it."

"Have you ever seen one of those shells that pierce the timber of bridges and ships, uncle?"

"Yes; I have seen the pholus. But they pierce not only timber, but even hard rocks. There is one thing, however, which can defy them, that is iron; and, as that is so largely used nowadays, the pholus has more than it can manage."

"Is it a very hard shell, uncle?"

"No, George; it has puzzled wiser heads than yours to discover how it is done. It seems very inadequate to its work."

"What a clever little creature it must be!"

"I should like you to find a very curious little thing which is called the chiton. If we were on some shores we might find some four or five inches in length, but ours are all small ones."

"How may we know them, uncle?"

"Instead of having one shell like the periwinkle or a double one like the oyster, the chiton carries *eight* shells on his back, and they overlay each other like the tiles on a house."

"Is it any use looking for pearls, uncle?"

"Ah, Nellie, we wouldn't mind buying a few shillings'-worth of oysters if we were likely to find a pearl or two in the shells. But we should have to go to the Indian Ocean for them. If we were at the Persian Gulf now there might be some use in searching."

"I wish we could all see the Indian Ocean, uncle."

"You would find some most magnificent shells there. There is one called the giant clam which has been found to measure four feet in length."

"Why, that is as long as I am tall!" said little Nellie, at which conceit her brothers laughed heartily, telling her that she would have to grow considerably taller before *she* could be a "giant clam."

MARINE BIRDS.

“**W**HAT shall we talk about this morning—birds, fishes, sea-weeds? Which do you say, Harry?”

“I say fishes?”

“George?”

“I vote for curiosities—coral, and so on.”

“What does Nell say?”

“Birds, please, uncle, if the boys don’t mind.”

The “boys” did not mind waiting for their favourite subjects; so on the morning of which we are writing they talked about those birds which frequent the shores and the ocean. Will our young readers who are also staying by the sea like to hear what they said?

“We have not long to wait. Look yonder.”

“Wherever you are, in the vicinity of the sea, you are pretty sure to see them.”

“Are they sea-gulls, uncle?”

“Yes, Nellie. The gull is decidedly a marine bird. It is not found inland unless it has been driven there by severe storms; but it is one of the most common objects of the sea-shore. The wind is getting high: if you listen you may hear the cry of the gull.”

"There! It is something like a laugh, uncle."

"Yes; and something like a scream, and not unlike a wail of pain. I am afraid if our little girl lived in a solitary house somewhere on the shore, she might feel nervous at the strange weird noise which these gulls make on a stormy night."

"How many kinds of gull have we, uncle?"

"Eleven or twelve; but, of course, some are rare."

"Do they like stormy weather best?"

"If we may judge by their activity, we may suppose they do. They spread out their wings, and fly against the gale, screaming as they go, sometimes seeming to mount up to the clouds, and then dipping into the sea, or hiding among the rocks, being driven back by the storm, and then persevering against it."

"It doesn't flap its wings loudly?"

"No; its flight is very quiet and easy. It is not a timid bird. One would almost think from its habits that it loves company, for it flies sometimes very near ships, as if watching them."

"Perhaps it is on the look out for something to eat?"

"Very likely. If a piece of bread be thrown upon the water, it will not long remain untouched if any gulls happen to be near."

"Let us go to the rocks, uncle, and see what more we can find."

"There is a bird which is very much like the inland swallow."

"In what way, Harry?"

"Its tail is just like a swallow's, and its wings are pointed; its body, too, tapers in front."

"That is the common tern, almost as numerous as the gull, but its flight is far more swift. The tern is an excellent fisher. It sees at a glance any little fish that may be near the surface, and darts down after it before it has a chance of escape."

"Where does the tern build its nest?"

"It can scarcely be said to build a nest at all. It merely scoops out a little hollow in the sand, and then lays its eggs. George's idea that the tern was like a swallow has not occurred to him alone,—it is called the sea-swallow because of this resemblance."

"The pelican is a marine bird; is it not, uncle?"

"Yes. Have you read that beautiful poem by Montgomery, 'The Pelican Island?'"

"Yes, uncle, I remember—

"They were as pictures painted on the sky,
Till suddenly aslant away they shot,
Like meteors changed from stars to gleams of lightning."

"I should like you to see such a flight as may be seen on the shores of the Indian Ocean. They fly along all together to a great height, and then all at once swoop down into the sea, throwing up the spray, and making altogether a great splash."

"I saw a pelican once in a zoological show, uncle, and the man showed us what a large pouch it had—large enough, he said, to make him a nightcap."

"Yes, Nell; it is large enough to contain several good meals, for it fills its pouch with fish, and then goes away to some quiet spot to eat them at leisure, or feed the young with them. The pouch will hold several gallons of water—I think as many as nine or ten."

"It must be a very large bird."

"The wings of a full-grown one extend twelve feet."

"Are there any British pelicans, uncle?"

"Yes; on some parts of our coast may be found a large bird, with black feathers, a yellowish face, green eyes, and a long hooked bill. This is a cormorant, and belongs to the pelican family."

"Has it a pouch like the others?"

"No; it is very inferior. The cormorant is possessed with a wonderfully good appetite. It sits on the edge of the water and catches whatever may come near it, and it also dives after the fishes in the sea. So good a fisher is it that in bygone days it was used even in England to catch fish. It is still so employed in China."

"Can it swim as well as fly?"

"Oh, yes; nearly as well as the fish itself. When the cormorant wishes to swallow a fish, he takes it crosswise, and throws it up into the air, catching it head downwards as it descends. Nellie, what colour did I tell you its feathers were?"

"Black, uncle."

"And they appear to be so; but really they are a very deep green."

"Does the cormorant also scoop out its nest in the sand?"

"No; it is made of dried sea-weeds, and is either on lofty rocks, or in the branches of trees."

"I have heard about the eggs, uncle. They are covered with chalk, and are three or four in number."

"The gannet and the shag also belong to the pelican tribe. The shag is sometimes decorated by a

tuft of green feathers. There is a kind of gannet found especially on the Bass Rock, at the Firth of Forth, which is sometimes called the spectacled goose."

"Why has it that strange name, uncle?"

"Because it looks as if it wore spectacles—it has such a peculiar face. You have heard of the St. Hilda cragsmen, and the risks they run? It is in search for the young and eggs of this bird."

"What was that funny little bird we once saw taking such care of its one egg?"

"The guillemot. It lays its egg so near the edge of the rock, that it is a wonder it does not fall off and get broken."

"I see one which looks very much like a sea-parrot."

"That is the puffin, a very lively little creature, with a parrot's beak. The said beak is very useful; it will catch fish, dig burrows in the sand, and fight the owner's enemies."

"Does the puffin eat fish, uncle?"

"It is very fond of sprats,—will catch five or six and arrange them in a neat row along its beak, all ready to be eaten. Now, if you are very still, you may, perhaps, see a durbin."

"I have read about that: it is found on sandy shores, and likes shrimps, and limpets, and so on."

"Quiet correct, George: only the weather is rather too hot for the durbin to be here; we are not likely to find any till September."

"What clever little things the stormy petrels must be, uncle!"

"Yes, it would be interesting to watch them as

they skim along in the hollow of the waves, foretelling a storm, or rather accompanying it."

"Are they large birds, uncle?"

"No; about six inches long and as large as a house swallow, with black feathers."

"Why does the petrel go near the ships?"

"Perhaps to escape the fury of the storm by hiding under the stern. The sailors are very fond of the petrel. They love it because of its warning, which gives them notice to prepare for the strife of the tempest. They gladly take it in and feed it."

"I know some lines about the stormy petrel, uncle—

" 'A thousand miles from land are we,
Tossing about on the roaring sea;
From billow to bounding billow cast,
Like fleecy snow on the stormy blast,—
Up and down! up and down!
From the base of the wave to the billow's crown;
And amidst the flashing and feathery foam,
The stormy petrel finds a home,—
A home, if such a place may be,
For her who lives on the wide, wide sea.' "

"Did you ever hear of a bird called the booby?"

"Is it found in England, uncle?"

"No; it may be seen on the Pacific Ocean."

"Why is it called by that name?"

"Because it does not fly away at the approach of men. It stands quite still on the vessel where it may have alighted, and allows itself to be taken by the hand or knocked down by a stick."

"It is a silly thing."

"Not in every respect. It is a dexterous fisher, and watches a shoal of fishes with most amusing intentness, and at last pounces down like a stone and

pops the fish in its mouth. It has a great enemy in the frigate bird, which swoops down upon the booby and makes him drop the fish he so cleverly caught, the frigate seizing the fish before it has time to reach the water again. A writer describes a scene he saw near the Cape of Good Hope in which all kinds of birds flew about like a cloud, and there arose such a chattering, singing, and screaming that he was obliged to stop his ears."

"Is it in China that the esculent birds' nests are found, uncle?"

"What do you mean by esculent, Harry?"

"Eatable. Ah, Nellie, you needn't look incredulous. The Chinese really do it—not only birds and birds' eggs, but birds' *nests*."

"Are they nice, uncle?"

"It is to be hoped they are, for great risks are run to get them, many lives being lost in the attempt."

"What sort of nests are they, uncle?"

"Some suppose the nest to be really the spawn of fish. It is a glutinous sort of substance, similar to what may be found floating on the sea."

"Do birds live in them?"

"Now, Nellie, of course they do,—birds something like small grey swallows."

"Where are the nests built, uncle?"

"In caverns; a large number of them in a row."

"I would rather have a good chicken, uncle, than all the birds' nests,—wouldn't you?"

They agreed that they would, and uncle proposed that they should return and see if any were ready for them.

MARINE PLANTS.

“PLEASE, uncle, when will you tell us about sea-weeds? We have all gathered a collection, and we want to know their names.”

“This morning, if you please, Miss Nellie; so select your best specimens, and let us see if we can find out anything about them.”

“Why are they called *weeds*, uncle?”

“It is very difficult to say, Harry. Certainly it is quite a misappropriation of terms. They no more deserve to be called weeds than do the roses and dahlias in your gardens at home. They are fully as interesting, and in their way as beautiful. There is little doubt but that if we could see the bottom of the sea as plainly as we can our lawns and flower-beds we should be very much surprised as well as delighted. Nellie, how many colours have you among your sea-weed?”

“Light green, dark green, purple, red, pink, drab—almost every colour, uncle; only none of them are very bright.”

“So you see these sea-plants and flowers are as varied as those growing on land, and if we look at them with a desire to be instructed we shall be also

interested. There is one thing we should all notice, —God has filled the world with beauty ; not only the places which are traversed by man, but every secret corner and hidden spot has some beautiful object in it."

"There is most of this kind, uncle. Is it not called '*wrack*?' "

"Why do you suppose it to be wrack, George?"

"Because you told us to look out for a plant with pairs of air-vessels."

"Yes, this is the common bladder-wrack or black tang, and is the most plentiful on our coast. You see the colour is dark green, and it has long narrow fronds almost like leaves; a mid-rib runs up the centre, and here and there, as you have noticed, are little swellings or air-bladders, always in twos, on each side of the mid-rib. At the end of the leaves, or branches, are yellow vessels, containing large numbers of seeds."

"What is a frond, George?"

"A leaf."

"Nellie, supposing we pick out all the bladder-wrack and jump on it."

Nellie sprang off after the first jump with a startled "Oh!"

"In some places this covers the low rocks lying about, and, though it is very dangerous and slippery to walk upon, many children delight in nothing so much as to jump upon it, and make the air-vessels explode."

"Here is one something like the bladder-wrack, only it has not the mid-rib we see in the other."

"That is a species of wrack—the knotted wrack."

"Do you know of what use these wracks are?"

"They are used in the manufacture of kelp, though not as extensively as formerly, an alkali from Spain being used instead."

"What is kelp, uncle?"

"A carbonate of soda used in the manufacture of soap and glass. Years ago Scotland produced 20,000 tons every year. You would like to see the kelp-kilns there. They are round pits dug in the sand or on the beach, with a few stones round. In these pits they light the fire in the morning, generally using dried sea-weed for fuel. Before the day is gone the furnace is full of melted matter, which is mixed and turned by iron rakes. The ashes of the sea-wrack yield half their weight in alkali."

"Then the wrack, although so common, is not useless."

"Another kind called black wrack is used by the Dutch to pack their lobsters in."

"Here is a long cord, like a rope almost, and so strong that I can't break it."

"The Orkney people call that the sea catgut, and use it for fishing lines. It is a wonderful plant, sometimes growing to the height of forty feet; it frequently lies in large beds on the surface, like sea-meadows, and boats have been known to become entangled in it. Nellie, take it in your hand, and tell us how it feels."

"It seems oily and slippery."

"It is naturally slimy, but is covered with a thick coating of hair, which makes it smooth."

"As smooth as Nellie's curls?"

Now that was rather unkind, because the wind had certainly blown Nell's curls all about her face in some confusion; but she only said, with a pout, what other people think, that it was "no good to get cross with boys."

"Here is a pretty plant, something like a fan."

"That is not a very common kind. It is the peacock's tail. You see the colour is a yellowish olive, marked with dark brown bands. It is only a small plant, seldom growing more than five inches in height."

"Is this a marine plant, uncle? It looks almost like sewing cotton."

"That is the sea-grass."

"What is this nice green one?"

"The sea-lettuce. This is a very pretty plant; we must put one in our aquarium."

"This is something like it, only blue."

"That is the purple laver. The Irish call it sloke. This is pickled and preserved, and then eaten."

"Eaten, uncle! Are sea-weeds used for food?"

"Large quantities are eaten. Not long ago it was a common cry in Edinburgh, 'Buy, dulse and tangle;' or, 'Wha'll buy dulse and tang?'"

"Have we any dulse among our specimens?"

"Yes, this red plant is a bit. Taste it, Harry."

Harry did so, passing it on very eagerly to the others; but they did not appear to enjoy it.

"You might like it better when well cooked. It is said to taste like roasted oysters. It used to be rolled up (raw) and chewed, as some strange and not

over-clean people chew tobacco. It is a favourite with sheep ; they will sometimes even venture so far into the water in search of it as to get drowned. It is quite an important food of the Icelanders. They wash it in fresh water and dry it in the air, which covers it with a white powdery substance, which is very palatable ; this they preserve for eating in close casks. All classes eat it, either with fish, butter, or boiled in milk with rye flour."

" Shall I tell a story that I have heard about dulse, uncle ? "

" Yes, George ; we shall be all glad to hear it. "

" There was a fisherman's family who lived almost entirely upon it. One of the boys went to London and made his fortune there. But when he was quite a rich man, and had every dainty the English market could furnish, he used so to long for this dulse that he had it brought over to him and served every day at dinner, to the great disgust of the company, who marvelled that anyone should relish sea-weed. "

" What sort of a plant is tangle ? "

" It is what we in England call the sea-girdle. It is rather a peculiar plant. It has a number of little rootlets with which it fastens itself securely to the rocks. Then there is a large stem as big as a man's wrist, and on the top of it are broad, oblong leaves. The stems when young and tender are used as food for cattle, having been previously boiled. "

" I suppose we cannot find any Irish moss here ? "

" Yes, you may among the rocks. It is found nearly all over the coasts of Britain. "

" Why is it called Irish moss, then ? "

"Because it was first used for food in Ireland."

"Is it the same as the Carrageen moss which we get at the chemists' shops?"

"It is the same. It is used as a substitute for Iceland moss."

"What sort of a plant is it, uncle?"

"It is so variable that you would have some difficulty in deciding upon it. The form in which it is most seen is that of a flax leaf, cut into branches, which are cut again, and the ends curl up like frills. When it is under water it sometimes looks all kinds of colours; it is often green, and in many places yellow."

"How do they preserve it?"

"They wash it in fresh water, and leave it to dry until it becomes hard."

"How is the Irish moss-jelly made?"

"The moss is boiled. The water in which it has been boiled is boiled again, being sweetened with sugar and milk, and some cinnamon or nutmeg. Then it is poured into a mould, where it hardens, and looks very much like blancmange. It is also used instead of isinglass. It is considered very nourishing for invalids, and is particularly nice when eaten with cream."

"I am afraid I should not like the jelly as well as blancmange."

"This Carrageen moss is used for size in the calico-printing manufacture. It is good for calves, boiled in milk, and pigs are fond of it boiled in milk."

"What is this plant that is among all the others?"

If we try to pick out a perfect specimen, there is sure to be some of this clinging to it."

"This is the coralline."

"I thought that was an animal production."

"No; it has been thought to be, but this is not *coral*—this is a *plant*. The joints are of a shelly substance, and seem to be a deposit of lime. It is a dark purple colour while in the water, but, taken from its native element, it turns to a stony white. If we hold a dried branch of coralline in the flame of a candle, we shall see an illustration of the lime-light; the part that touches the flame will give forth a very bright white light."

"I should like to try that this evening."

"The coralline is not easily killed. If the waves wash away its branches it doesn't die, but what is left becomes studded with round knobs, and still looks fresh."

"Is not sea-weed used as fuel in some parts?"

"Yes. In Guernsey and Jersey it is collected in great quantities. It is there called *vraick*. *Vraick*-ing seasons are in March and July. The people assemble with scythes in their hands, and cakes made of flour, milk, and sugar, and go in companies of ten or twelve to the beach. When the tide is out they cut and collect the seaweed, and it is carried away in carts and boats. The islanders are very merry in *vraick*ing time, which only lasts about ten or twelve days. They keep their fires always burning; the ashes are used as manure, so are the weeds themselves, and are very useful for the purpose."

"I should like to dry a bit of every kind."

“In the Atlantic, at the south-west of the South American peninsula, there is found a gigantic seaweed, seven hundred feet in length. You may be interested in knowing that the beach of the Falkland Islands (a small group near the Antarctic circle) is covered with a confused mass of this extraordinary weed, each string of which has been said to be thicker than a man's body.”

SEA-FLOWERS.

“BEFORE we talk about fishes, it will be very interesting to find and examine some sea-flowers.”

“Do they grow upon the sea-weeds, uncle?”

“No, little Nell; the sea-flowers of which I am speaking are in reality animals that look like flowers. Indeed, in many respects they partake of the characteristics of both the animal and vegetable kingdom.”

“Do you mean sea-anemones, uncle?”

“Yes, I mean those wonderful little creatures, some of which look like dahlias, China-asters, or daisies.”

“They are not as pretty as garden flowers, though.”

“Some of them are positively beautiful, and when we have had our chat about them I am sure you will say they are also very wonderful.”

“Shall we find them on the rocks?”

“That is the best place to look for them. When resting there they take a half-globular shape, sticking by a broad bottom to the rock. There is an orifice in the centre of the top of the anemone, which opens when the creature is hungry and seeking for food. This is contrived by the edges or lips being

turned inside out until the orifice is as wide as the base. A number of tentacula or fleshy rays come from the outer rim and are arranged in rows all round. These tentacula look something like the rays of a marigold or daisy."

"Which is its mouth, uncle?"

"The orifice of which I have told you, in the middle of the top. When it is hungry it turns back its lips and throws out the tentacula, which, acting as fingers, convey the food to the mouth."

"What does it eat?"

"Fishes. It is able to swallow animals even larger than itself, because it can so greatly dilate itself."

"How does it procure food?"

"These tentacula are very tenacious. If, when they are spread out, a little fish happens to touch one, it cannot get away. It seems to be poisoned, for all its movements stop, and to be stricken beyond the power of movement. The tentacula of the anemone close over it, and it is conveyed to the mouth, and from thence to the stomach. If it be a shell-fish the shell is thrown back again, after a time, through the mouth, completely emptied of its contents. Dr. Johnson has told us of one of these creatures which somehow contrived to swallow a scallop as large as a tea-saucer. The anemone itself being very much smaller, its dilated body, stretched over the scallop, became as thin as a wafer; the stomach was completely separated into two halves."

"What a voracious little creature!"

"And yet it is capable of very long fastings. But

I must tell you the most curious thing about the anemone. If any part of its body be cut off from any cause, it has the power of reproducing, just as when you cut down a geranium there will be new shoots springing up where the old ones were. It has even been seen that when it has been taken from a rock, and little bits have been left behind, each of these will in time be provided with stomach, tentacula, and, indeed, all that goes to make it a perfect animal."

"It must be very difficult to kill an anemone."

"No, George; it is easy enough to kill any of the creatures which God has given to us; but this should make us all the more tender and careful over the little lives which hang by so slight a thread. No noble boy will kill anything out of wanton cruelty; he will try to use his power wisely and well. The anemone can be soon killed if placed in fresh water. Should you think the anemone has any power of moving?"

"I should think not, uncle, any more than a plant can."

"Yet it has. When from any reason it is dissatisfied with its place of abode, it gradually slides down the rock to the place where it wishes to remain. This is the way in which pieces become detached, which, as I have told you, grow into perfect anemones."

"We must try and find some good specimens when we row out presently."

"Those in the water and those on the rocks present a very different appearance. The latter seem to know that there is danger of their being detected

and removed, for they are covered with shells, and warts, and gravel, and sea-weed, which seem to be glued to the creatures, so that you may very well pass them over without seeing what is beneath. The others which always live in the sea, and are therefore never left bare by the tide, seem to have no fear; they float about with their beauties quite in view, their smooth skins and their varied colours making them most attractive creatures."

"But if they are hidden in this way, how shall we be able to find them?"

"I have heard of people searching for them in the dark—that is, feeling for them."

"If a crab happened to be there, it would be the worse for your fingers."

"Look about on the rocks for little lumps of green or red jelly."

"I have found one, but it does not feel very jelly-like; it is too hard and firm."

"But it is smooth and slippery. This is the smooth anemone, and is, perhaps, as common as any."

"We may find others near."

"They are sometimes found in companies of a dozen or two, though now and then there may be one which seems to prefer solitude."

"It seems to be quite transparent."

"Yes; and if we put it into our glass, we can examine it, though it will require a microscope to enable us to perceive all its beauties."

"Now it is spreading out its tentacles."

"If we give it a fish or a fly, you see the tentacula

seize tight hold of it, and carry it to the stomach. It keeps its fingers or arms, whichever you prefer to call them, in the stomach while it eats. It digests its food easily enough, and presently the arms will gradually come out again, and cast off the shell or skin."

"Had we better take more than one specimen, uncle?"

"If we get a healthy one, and it lives, that will be sufficient, for it multiplies very rapidly."

"Of course we must keep it in sea-water, and put some gravel and sea-weed in with it."

"Now, here are some of the most beautiful of the sea-anemones—the dahlia wartlet."

"What beautiful colours!"

"These are larger and more gorgeous than the others, and may be found as large as a dinner-plate. They are olive or dark green, crimson, purple, or, indeed, almost any colour,—the tentacles are rose-coloured, with violet rings; while the red of the disk is darker."

"This might easily be taken for a real dahlia."

"It is said that bees, though they might be supposed to know better, are sometimes mistaken; but, if once they settle on the anemone, there is no help for them,—they are certain to be poisoned or drowned, and then eaten."

"These tentacles are thicker and shorter than the others."

"Yes; their scientific name is *crassicornis*, which means thick-horned."

"Oh!" This was rather a loud and prolonged

exclamation from little Nell, who had ventured to touch the crass "to see how it felt," she said, and found her finger sticking to it with anything but a pleasurable sensation.

"Now, Nell, if you were a crab, or a shrimp, or a limpet, you would be eaten for certain; but as you are a young lady you can pull your finger away without it being hurt."

"Uncle, *how* can it hold so fast?"

But before he could explain, of course, Harry and George must both lay their fingers on the thick-horned anemone that they might also adhere.

"We should have to look at it through a microscope to see how it is done; but on its body, and especially on the tentacles, there are little organs called thread capsules. Inside of them are tiny threads, very small, but very strong, wound up something like a watch hair-spring; these are shot out like tiny spears. Now watch it."

They did so with very great surprise, for what had before looked like a beautiful flower shrank up into an ugly lump not larger than a five-shilling piece.

"That is because you have made it angry or frightened it by touching it. The only way to watch it properly is in the water. It can change itself very rapidly. Sometimes it pouts, sometimes shrinks, sometimes takes in such a quantity of water that it is impossible to find out what its real shape was."

"I suppose these anemones are not good to eat?"

"The crassicornis may be eaten, and they are not at all unpalatable."

"There are some pretty ones, uncle."

"They are the rosy anemones. You see the mouth is of a beautiful crimson colour. When the tentacles are open they are sometimes an inch wide."

"This has a deeper hue."

"That is the scarlet-fringed anemone. The inner tentacles at the root, or the parts which touch the base, have black marks, while the outer ones, as you have noticed, are scarlet."

"What numbers there are on the rocks under the water, some with white tentacles!"

"Those pretty little things are the snowy anemones. The disk is as white as the tentacles."

"What are these, uncle, please? They are almost like the rosy."

"That is the 'orange-disk.' You see why it is called so. And this is another interesting kind—the plumos; its colour is higher than the others, and more clear and transparent."

Harry thought it "looked as if it had a nightcap on."

"That is because the frill of tentacles, which are always short and close, happen to be white in this instance; but you may find them fawn, orange, brown, or olive."

"Is this an anemone?"

"That is a lucernia, so called because of its resembling a lamp. You see this mouth has four lips of a square-like form."

"Here are some dead men's fingers, uncle. I have been looking for them."

"They are also called cows' paps, and mermaids' s, and dead men's toes."

"What a collection of strange names!"

"They are called fingers because they look like the stumps of fingers, and from their dull white hue they are called dead. The principal differences between these and the anemones are that they multiply themselves by eight at a time instead of six, and they are joined together in one mass, instead of each living separate lives, so that each contributes to the support of the whole."

"George, will you describe it?"

"It isn't very pretty. It is spongy, soft, leathery, tough, and fleshy."

"Here is another curious creature, the madreporé. It belongs to that wonderful class which form the coral, of which we will, perhaps, talk on a future occasion. When it is frightened it contracts itself into a small centre with little spikes coming out; but when it grows hungry it spreads itself out in a semi-transparent body, and presently puts forth some tentacles which are of very beautiful tint, and are adhesive, very much like those of the anemone, only that on the edge of each tentacle it has a little round head."

"Does it eat the same things as the anemone?"

"Yes, but it prefers to find its own food; it will not eat things that are given to it as the anemone will, though it seems always hungry."

"This is a pretty thing, uncle. Is it a vegetable or an animal?"

"It is a polyp like the others. It looks very much like a broad purple feather. It is called the sea-pen. The quill part is tinged with orange. The

edge is beautifully fringed on each side, growing smaller toward the tip. It has flat layers one above the other, and the polyps are placed on the upper edges of these layers. The stem bends backward to form a hook. This stem sticks at the bottom of the sea, till it is somehow hooked up."

"Look, here is a bluish light coming from it!"


"That only comes when it is irritated. Perhaps it frightens some of its deep-sea foes with this faint light. Because of this peculiarity its scientific name is *pennatula phosphorea*."

"Oh, uncle, I wish all boys and girls could see the wonders of the sea."

"I wish so too, Nell. But although they cannot go now, they may all be able to see them when they grow up to be men and women, thanks to railroads."

"Thanks to uncle!" said Harry, which they all echoed.

WHALES.

 HERE was a rumour which very much disappointed our young friends—a report that a whale was to be seen. Of course, they with hundreds of others rushed to the spot where it was said to be, and found that the report was false. They were wearied with their chase, rather sad, and very tired, so they naturally preferred resting for a time, and talking about the whale, to looking for any other specimen.

“I suppose it’s no use expecting to find a whale here; they never come so near us,—do they, uncle?”

“Oh, yes; several species have been found on the British shores. The spermaceti whale, and especially the small-eyed, or the black-headed, has been found on the Scottish shore.”

“Which is it that the fishermen call the right whale, uncle?”

“That is not one of the spermaceti, but the common whale, the Greenland species, for the fishery of which so many well-manned ships leave our country every year. Who knows what town sends most ships?”

“I know, uncle; it is Hull which sends them to the northern, and London to the southern fishery.”

"And I know, uncle, that whales are caught on the coasts of Greenland, in the South Seas, and the Antarctic Ocean."

"But, although people go to great expense in fitting out these vessels, the whale fishery is very productive, for some full-sized whales are of the value of 1,000*l*. One cargo has yielded 11,000*l*.; and in one year the whales caught for Britain have been worth 700,000*l*."

"Oh! they can afford to spend money on the outfit, then."

"Yes; but not only money is spent,—many lives are also risked, and sometimes lost."

"What makes the danger, uncle?"

"You could almost discover that for yourselves. You remember that merely to sail among the Arctic regions is full of dangers. Then the whales are tremendous animals to battle with, and, if you wanted to exert your strength to the utmost, the water is scarcely the place you would choose."

"What kind of vessels do they have?"

"They are made on purpose for the whale fishery, and, of course, are very strongly built, with plenty of oak and iron to make them strong. Boats readily furnished are always kept fastened to the sides of the ship. These are also built as strongly and as lightly as possible."

"I suppose they go out in the boats to catch them?"

"Yes, there is always some one on the look out for a whale, and as soon as one is seen the boats are lowered. There are several rowers, a harpooner, and

a steersman. There is also coiled up in the boat a line several thousands of feet long. The harpoon, which is made of the toughest iron, something like an anchor in shape, and pointed, is attached to the end of the rope. The harpoon has a long handle. Very quietly the rowers take the boat up to the whale, and, when a few yards from it, the harpoon, which, as I have told you, is sharp and barbed, is thrown into its body."

"Of course it darts away then; or is it killed?"

"No, it isn't killed; it does dart away, but the rope which is fastened to the harpoon unwinds, so it is not lost, though it does dash away at great speed."

"They must have to be careful about it."

"Indeed they have; but accidents often occur. Sometimes the rapid friction of the rope on the side of the boat causes it to ignite, sometimes men are caught in the rope and dragged overboard, and sometimes the whale, when it rises to the surface, knocks over a boat with one blow of its tail."

"Cannot they row out of the way of it?"

"No; in consequence of the pain it moves so swiftly, darting up and down so unexpectedly, that the men have not time always to escape from its reach."

"The men of one boat cannot catch the whale alone?"

"Oh, no; they hoist a flag, which is responded to by the ship. Other boats come to the rescue: otherwise, if the line is all run out, they may have to cut it, and lose it, as well as letting the whale go with it."

"I suppose all the other boats have harpoons too, and ropes."

"Yes; and so at length the animal is exhausted. When the men are near enough they spear it, trying to give it a blow in the vital parts; and at last blood and water come from the blow-holes, the tail is moved about in agony, and it dies."

"What do they do with it then?"

"They tow it to the ship, at the sides of which it is fastened, and then proceed with the process of flensing."

"How do they get the fat, uncle?"

"The men have shoes with iron spikes; they jump on the whale, and their spikes run into the fat or blubber, so that they have firm footing. They then proceed to dig out the fat with iron spades, and stow it away in barrels."

"Please, uncle, how large are the whales?"

"They are, of course, different sizes. They have been found from fifty to sixty feet long. The largest is the Rorgual."

"I think, uncle, I have heard that they are more like animals than fishes."

"Yes, they are warm-blooded, and they suckle their young like land animals; but they perform all their functions in the water, only coming to the surface to breathe."

"Do they breathe through the blow-holes or the mouth?"

"Through the blow-holes, which are openings on the highest part of the head. By a singular and beautiful contrivance this wonderful animal can

swim and feed with open mouth, and at the same time can prevent the water going into the stomach or creating any disturbance there."

"Of course it has to come up frequently for air."

"About every eight or ten minutes, though it is possible for it to remain under water an hour."

"Such an immense creature must require a great deal to eat."

"And yet, in consequence of the smallness of the throat, it can only take in very small things—such as herrings and sprats. The upper jaws of the whale are furnished with perpendicular plates of whalebone, each jaw containing near three hundred of them, the longest of which are from ten to twelve feet in length. These plates are fringed with a kind of horny substance, which, when the mouth is opened, touch the tongue, and so form a kind of network inside the mouth. The little fishes get entangled in this network, and so are unable to escape with the water that enters the mouth with them."

"No wonder people get plenty of it to put in their corsets and dresses."

"When they have the whale they sometimes move the whole of the whalebone into the boat at once, and then cut it up into junks."

"The eyes of the whale are rather small; aren't they, uncle?"

"They are small, and seem to be placed in rather an awkward part of the body. But they seem to be intended not so much to enable it to catch its food as to enable it to escape the fishes that are its enemies,

or the rocks that might injure it if it were swimming very rapidly."

"That would be a collision nearly as bad for the whale as the railway collisions are for men."

"Can any other fish hurt the whale? I should have thought it could conquer all its enemies."

"You know the largest and the most harmless creature on land is the elephant. The whale is like it. Though so bulky, it can be hurt far more by other fishes than it can injure them. The sharks especially wage war with it. The Arctic shark helps itself to huge lumps of its flesh with its saw-like teeth. The thresher, a large shark twelve feet long, is said to slap it with its tail. The swordfish, too, uses its sword to the great discomfort and pain of the whale."

"It is a wonder that the whale cannot retort. Why doesn't it bite at the quarrelsome little things?"

"The Greenland whale is said to have no teeth; but the spermaceti is provided with a very formidable set. The black-headed spermaceti has one on each side of the lower jaw, and in a large whale the principal ones are more than nine inches in length. The Greenland whale seems to be quite frightened at this creature."

"In what part of the whale is the spermaceti found, uncle?"

"It is clear oil in the head, which, when cool, is spermaceti. The cavity which contains it is called the case, and in a large whale this hole has been found to contain ten large barrels of the oil."

"Can it swim very rapidly?"

"When quite undisturbed it moves leisurely through the water, just moving its tail from side to side; but when aroused it can go at twelve miles an hour. It swims with its head erect, oil being lighter than water; its head is, perhaps, the lightest part."

"What is the spouting of the whale, uncle?"

"It exhales air through the blow-holes, and that forces the water up in spouts. This circumstance is a great help to the whaler. The sperm whale is very regular in its breathings. It stays in the water from an hour to an hour and a-half; then it comes up to the surface for about ten minutes, and spouts sixty or seventy times."

"Where is the sperm whale found?"

"In the Pacific Ocean."

George announced his intention of being a whaler when he grew up, but Harry reminded him of the boat tossed over by a dash of the animal's tail, and his uncle said,—

"George, whether you remain at home or become an adventurer, never forget what a wise and mighty God rules over us, who can make so perfectly alike the wonderful whale, which probably lives hundreds of years, and the pretty little sea-anemone."

FISHES.

“**H**, uncle, there is fun up yonder, where the fishermen are drawing their nets. All sorts of boats come in, and the fishes are alive.”

Of course, after such a description of “fun” from Harry, the others hastened to the scene, where the men were slowly dragging in the nets and looking eagerly at their contents. There were soles, and mackerel, and lots of little crabs, as well as harvests of sea-weed, and a few anemones ; and of course our young friends proceeded to question their uncle, as usual.

“Will they ever get rid of all these, uncle?”

“Oh, yes ; you see there are people already waiting to buy some of them. A good deal of their haul will be eaten to-day, and some sent off to London by the very next train.”

“They are merry enough over it, and seem to be selling it very cheaply.”

“Have you ever noticed how well adapted the fishes are for swimming? You see they are larger in the middle, and tapering at each end. No other shape would do. This enables them to move so swiftly, and cut through the water. You see the same wise

arrangement in birds. You have looked at a swallow, and seen that it can move rapidly through the air for the same reason. People have followed out this in their boat-making."

"By what means do they swim?"

"By the fins, and especially the tail, which acts as the propelling force, the fins being of great use in directing the motions of the fish."

"It is a wonder they can get along at all without either legs, or arms, or wings."

"Ah, but they have things which answer the same purpose. For instance, the fish has two fins on the breast, which are called pectoral, answering to the fore-feet of four-footed animals, or the wings of a bird. Then there are also two fins on the belly, which go by the name of the ventral fins. But this is not all. These denizens of the deep can also boast a large fin on the back, which from its position is called the dorsal fin, and one under the body, near the tail, known by the name of the anal fin. But I ought to tell you that often the tail is designated the caudal, or tail fin."

"But they do not merely swim, uncle; they seem to dive to the bottom, and pop up again in the water just as they please."

"Oh, yes. They are provided with air-bladders, by means of which they can make themselves lighter or heavier; and the depth of water in which they habitually swim seems to be regulated by the position of the ventral fins."

"They would not be able to swim so well if they had many limbs?"

"No ; their shape, size, and covering all contribute to the rapidity of their progress through water, the only covering that they have being scales—smooth, shining, and light."

"What are the scales made of?"

"They consist of a substance, hard, and yet transparent ; they are laid one on the top of another, so close as to be waterproof, and so regularly placed as to be no inconvenience in swimming. Some of these scales are very beautifully formed, though many of them are so small as to be invisible without the aid of a microscope."

"Do any of the fishes eat the sea-weeds?"

"They all seem to prefer animal to vegetable food. Indeed, from the largest to the smallest they feed upon one another. The bait used to catch mackerel is the tail of a mackerel."

"Isn't there a danger of all the fish being used, seeing that so many are caught and sold, and such large quantities are eaten by other fishes?"

"There is little danger of that, seeing that the sole averages a hundred thousand at a birth, the flounder a million and a half, and the cod eight or nine millions. So that, if we had fish every day for dinner, we need not fear that we shall leave none for our friends and neighbours."

"Is it true that fishes migrate?"

"It is very unlikely that they move more than a few miles. In the warm weather they come near the land to leave their spawn or eggs where the sun can touch them, and then go back to the waters, where they are safer than near the shore. So that

they are caught for us when they are finest, and most worth the trouble of taking."

"Do fishes live without breathing?"

"Their organs of respiration are very different from those of land animals. Their blood is not purified by air, but by water, the gills having the power of extracting the oxygen from it."

"What a number of soles these fishermen have caught!"

"Have you ever noticed in soles or other flat fish that the under side is almost white, while the upper is dark and dusky? This being so nearly the colour of the mud on which they rest gives them security from their enemies. This is necessary, as they lie at the bottom of the sea on their side, and move very slowly through the water, so that they could be easily caught if they could be distinguished. The eyes of the sole are not placed one on each side of the head, but both eyes on the side where they would be most useful."

"Are soles ever out of season?"

"They can be obtained nearly all times of the year, except in March and April."

"The mackerel is a prettier fish than the sole."

"The mackerel is, perhaps, one of the most beautiful of all fishes. This is obtained on different parts of our coast, from March to July; perhaps they are most plentiful on the coasts of Kent and Sussex. They have sometimes been sold thirty or forty for a shilling, and sometimes have been worth several shillings each. They are caught in nets during the night, and are at once conveyed by steam to

London. A hundred thousand are sometimes carried thither in a week, mackerel being saleable only when perfectly fresh. They are also caught by hooks, and people with plenty of leisure amuse themselves by taking them as they do in the summer by catching trout in country streams. Some of these mackerel are very large. They are generally about fifteen inches long, and weigh about two pounds, though the young ones, which are called shiners, are much smaller. The Spanish mackerel is very large, but not so nice as the smaller ones."

"These men have no pilchards in their nets; have they, uncle?"

"Pilchards are caught almost entirely on the Cornish and Devonshire coasts. Millions of pilchards have been caught in a single day."

"What sort of a fish is the pilchard, uncle?"

"Very similar to the herring, though there is a difference between them. The pilchard has a higher back, and is a rounder fish. But the great difference is in the dorsal fin, which is placed more forward in the pilchard than in the herring."

"Of course, such quantities cannot be eaten while fresh."

"Oh, no! More than a thousand boats and several thousand men are employed in the fishing. But a still larger number are occupied on the shore."

"It must be pleasant to sail among the huge rocks at the Land's End catching pilchards."

"Not if storms should come up unexpectedly. A fisherman's life is always full of danger. Perhaps in the prosecution of his work he needs more than most

men the protection of that God 'who maketh the storm a calm.' The crews of fishing-boats are, however, often very courageous, and have not unfrequently done daring deeds in efforts to save drowning people."

"After all, I fancy I would rather enjoy scrambling over the rocks, exploring the wonders of Mount's Bay, or the rugged scenery of Land's End, than be tossing about in a boat catching pilchards."

"So would I, Harry; and next to that I should like to be at Yarmouth during the herring fishery."

"The Yarmouth season begins early in September, though in the north they are caught in May or June."

"How do they catch them, uncle?"

"Principally by means of nets. Quantities of the best of them are sold fresh for present use, but the majority are cured."

"How are they cured?"

"There are two ways, and these make what are called white and red herrings. White herrings are merely put in salt at once without being removed from the fishing-boat. These boats are, of course, large, and fitted to remain in the sea. But red herrings give more trouble. They are cured by the Yarmouth men on the shore. Covered with salt, they are thrown in heaps on stone floors, and left to lie about a week; after which they are washed, and long wooden rods are run through their gills, a space being left between each herring. These rods are hung in rows one above the other from the top of the house to within seven or eight feet of the bottom. A wood fire is then lit, and kept up for three weeks

or a month, after which the house gradually cools, and the herrings are placed in barrels."

"The people who attend to them must be nearly roasted as well, uncle."

"They probably would be if they were hung up with the herrings, Nellie, but they don't happen to be."

"Can any idea be formed of the number cured?"

"Several hundred thousand barrels per year."

"And yet I suppose there are plenty left?"

"All the catching seems to make no difference. They appear sometimes to be blown near the shore, for at the east of the county of Fife the beach has been found covered with herrings for several miles."

"There would not be much trouble to fish them up."

"No; but the people could not eat them all while they were good."

"No, Nell; not if they were to have herrings for breakfast, dinner, tea, and supper. These herrings, although they might be worth thousands of pounds, for the want of salt sufficient to cure them are obliged to lie on the beach until carted for manure. You may read in the 'British Naturalist' an interesting account of an occurrence of this kind. It happened around the harbour of Crail. The water was so full of herrings that they could be dipped up by basketfuls. People hurried to the shore to fish, and the crier went round announcing the fact that they could be bought forty for a penny. This did not thin them sufficiently, and the next offer was a shilling a cart-load. But every day brought fresh thousands, and the people were invited to take them for nothing. And at last, as the corporation were afraid that they

might putrefy on the shore, and make the town unhealthy, the people were offered a shilling a cart-load to fetch them away."

"Oh, uncle, I wish you would take us where we should see something like that."

"In the lochs of West Scotland during the gales large numbers are thrown ashore. They like deep water, and are safer there, for if they are thrown upon the coast they die almost suddenly."

"Are cod-fishes caught in the same way as the herring?"

"No; they are taken one at a time by hook and line. This fish lives in deep water, and feeds on shelled mollusca, crustacea, and worms. It is a very greedy fish, and catches readily at the bait. It is taken all round our shores, but principally on the north and west of Scotland. Large holes are made in some of the rocks of the Hebrides, so that the sea-water can run into them at high tide. These are made to preserve fishes alive, and many cod-fishes are fed there. They are heavy fishes. I have read of one which weighed seventy-eight pounds and was sold for a shilling."


"That was nearly as cheap as the herrings."

"The cutters which carry the cod contain wells of sea-water in which to keep them alive. Any fresh water getting into these kills the fish."

"I never like to eat cod because it reminds me of cod-liver oil."

"The liver is a very useful part of the cod because of its oil, which, if not pleasant, is very nourishing, and is another proof that God has made nothing in vain."

SEA ANIMALS.

HE children, who had been trusted to walk by themselves along the beach, one evening came running towards their uncle. "Oh! uncle, there are crowds of people on the pier watching something. May we see what is the matter?"

"Nothing is the matter; they are evidently watching the porpoises, which sometimes come and play near the shore."

"I wish we could see some."

"If we hasten on we shall be in time, for although they are swift swimmers, they will perhaps remain near the shore for some time. There they are."

"What! those great black things?"

"They are brownish or blueish black at the top; the underneath part is nearly white."

"They seem to be playing at turning somersaults. It isn't possible to watch them without laughing,—they look such awkward things tumbling about one after another."

"They are very playful,—they love to leap and frisk about in the water. They are very much like fishes, and yet they are like animals too, for they are obliged to breathe atmospheric air, and they tumble to the surface in order to do so. They belong to the

cetaceæ. This family possess a reservoir of blood which contains atmospheric air, which they use as they need it. The porpoises are sometimes called 'sea-swine.'

"They don't look much like pigs."

"They do not remain at the surface long enough for you to see what they are like; there is a slight resemblance in shape; but you have heard that pigs are playful before a wind, and porpoises are especially frolicsome before a storm."

"What a number of them!"

"Yes; porpoises are very sociable, and are generally seen in herds together. The sailors call them 'schools.'"

"What do porpoises eat, uncle?"

"Many small fishes; but they have great feasts when herrings, pilchards, or mackerel flock near the shore. Sometimes they may be seen chasing the salmon up the river. These fish spring out of the water to escape the porpoises, but are soon exhausted, and come down almost close to the mouth of their pursuers."

"Is the porpoise good to eat?"

"Many years ago it was counted a great delicacy, and no feast was considered perfect without it. The cooks in those days made sauce of bread-crumbs, vinegar, and sugar to eat with it. Tastes alter. We should not consider it a pleasant dish. It has a strong, oily flavour."

"How large are they, uncle?"

"You have heard people called as fat as a porpoise, and will have understood that they are very

large round for the length. They are about five or six feet long. They weigh heavy because of the fat."

"Have they any teeth?"

"Yes; a large number—as many as forty-eight in each jaw. These interlock when they are closed."

"Is it easy to catch them?"

"When they venture too far up a river the fishermen catch them in nets. Sometimes a number of twigs are laid in the water so as to be covered at high tide, and left dry when the water ebbs. They seem to move about, and when the porpoises have gone beyond them to fish, seeing these twigs they are afraid to pass them, being naturally very timid; and so they are left behind by the tide and caught."

"Is not the dolphin something like the porpoise?"

"Yes; it is very much like the porpoise; but it is very unlike the pictures and descriptions which are given of it. It has a straight body, black above and white beneath. It has a long, pointed, narrow nose, and because of this peculiarity is called the 'sea-goose.' It is about nine or ten feet long."

"What is the food of the dolphin?"

"Like the porpoise it is very voracious, and eats almost anything it can find. The flesh of the dolphin has also been eaten; indeed, it is said to be quite savoury by voyagers who have tried it."

"Does the dolphin come into our seas, uncle?"

"Very rarely indeed. You can, however, get a good idea of them from the specimen in the British Museum. Our seas are too cold for the dolphins. They seem to prefer warmer climates."

"I should like to go where they may be seen."

"Persons sailing over the Atlantic Ocean may see numbers of them at play. They appear to be very curious creatures, for when they see a ship they hasten nearer to inspect it. Their games are very amusing, and their capture an affair of interest to all hands on board. As soon as one is harpooned the others rush away, leaving him to do the best he can. The dolphin can move very rapidly. The principal moving power seems to be in the tail."

"Is it true that dolphins change their colour when they are dying?"

"No; that is quite incorrect. There is a creature which does, and which has been confounded with the dolphin, the sailors giving it the latter name. But the right name is the coryphene."

"Are coryphenes like dolphins?"

"They are far more beautiful. Their sides look almost like polished silver; they are so brilliantly white. They may be seen in the Atlantic Ocean, flashing about the ship, never seeming to grow tired. They are very rapid swimmers. It is amusing to watch them, especially when they are pursuing the flying fish. These little fishes do not really fly; they merely spring out of the water, and are obliged to drop again to refresh themselves, so that the coryphenes are pretty sure to catch them in the end. These coryphenes are said to glide like lightning through the water, and have been known to spring ten yards. They are very wary and skilful, for they place themselves just where the flying fish must drop, which it sometimes does right in the coryphene's jaws."

"Poor little flying fish! Are we likely to see any grampuses, uncle?"

"We might, for they live in the British seas. They are very voracious animals, eating not only fishes but porpoises, and even small grampuses."

"Is it as large as the dolphin?"

"It is very large sometimes—from twenty to twenty-four feet in length, and very thick and strong."

"It must be very ferocious and cruel to eat its relations. Unnatural monster."

"Ferocious it is, but not exactly cruel, for it has been noticed to be particularly tender and careful to its young. As an instance of this, I may tell you of a case related by Waller, the celebrated poet, who tells how a grampus and her cub were on one occasion intently engaged in their usual occupation of catching as many fishes as they could, when their intentness prevented them noticing that the tide was rapidly receding. They were both washed upon the shore, and the people who resided near, noticing this, immediately took steps to capture the unfortunate animals. Both were severely wounded; nevertheless, the mother succeeded, though with much difficulty, in getting back again into deep water. The little one, however, remained behind exposed now more than ever to the attacks of the country people. The motherly instinct was aroused, and the old grampus returned to her cub. Lashing furiously with her tail, she managed to shield her young one till the return of the tide enabled them both to escape into the sea. There is one peculiarity belonging to the grampus which is worth noticing, and that

is the small quantity of oil it possesses. You will gather some idea as to the quantity when I tell you that it is not sufficient to make it worthy of being captured. In consequence of this the creature swims very deep in the water. Its motions are swift, and its appetite exceedingly great. This causes it to be very liable to dash itself aground. It generally makes a powerful resistance when captured, and can be killed only with great difficulty. A naturalist gives an amusing account of a number which grounded off Dundee. The fishermen had observed them somewhere before, but mistook them for porpoises. A harbour was being constructed and the masons who were at work noticed a great splashing. Hastening to see what caused it, they discovered a host of grampuses. Expecting some fun, the men set to work catching up hammers, chisels, crowbars, and anything they could lay hold of, and rushed into the water to attack the grampuses."

"What fun!" said George.

"Yes; it was fun for the men, but not for the grampuses—by any means. One man got on a grampus, which gave him a ride out to sea, and he had to get back to land how he could. The tails of the animals gave some of the men slaps rather too hard to be agreeable, which sent them rolling into the mud. The confusion and the merriment were something worth seeing."

"Is the seal a fish, uncle?"

"No; but it is peculiarly formed for being in water."

"How does it move along?"

"It has two fore feet, which partake of the nature

of fins, and are used as such, while the two hind feet act in the same manner as the tail of a fish. They help and guide it in its course."

"It can also live on the land, uncle."

"Yes; it is amphibious."

"In what way does it move on the land, uncle?"

"It paddles or shuffles clumsily along with its fore feet, drawing its hind feet after."

"Are there many kinds of seals?"

"Yes, there are various kinds. There is the common seal, found chiefly on the northern coasts of Europe; the elephant seal, inhabiting principally the islands of the South Pacific and South Atlantic Oceans; the fur seal, which comes from the same localities, and also from the shores of the Shetland Isles."

"That is where my pony came from, uncle."

"There is a peculiar variety found in the South Sea Islands, described by Captain Cook, and called sea-lions, on account of their large head, from which hangs shaggy hair, of considerable length, much resembling a lion's mane. These are the chief varieties."

"What kind of looking creatures are they?"

"Their appearance is mild and harmless, and before the destructive hands of man touched them they were very tame, for when the seal-hunters sought for their prey on the coasts of South Shetland, the groups of seals would remain on the shore unconscious of their danger, while the men killed and flayed many of their comrades."

"I should think they live peaceably."

"Not so peaceably but that some quarrels arise. I have read an account of a fight between two ele-

phant seals. The two antagonists waddle awkwardly, and touch snouts. They lift themselves up, and dash as hard as they can against each other. They then tumble over one another, biting and striking with great violence, and exhibit much fierceness. The combat rarely ends till one or the other is thoroughly exhausted."

"Do they ever kill one another?"

"Not often; and their wounds very quickly heal."

"What makes them fight?"

"It is the males that fight."

"Why, they are as quarrelsome as our boys," said Nellie.

"Oh, fie!" said uncle, "surely they never quarrel! The reason the seals fight is that they may get the leadership of a herd of females. You will be interested to know that seals, partaking as they do of the nature of the inhabitants of the land as well as of the sea, are liable to epidemics. Sometimes there have been large numbers of bodies of dead seals scattered on the shore of North Scotland, and the Orkney and Shetland Isles. At the same time it was also observed that the seals remaining in the water were sickly and feeble in their movements."

"Something like the cattle plague, uncle."

"I ought to tell you that there is one other distinct variety of seal worthy of mention."

"What is that, uncle?"

"The walrus, which is sometimes known as the sea-horse or morse. It lives wholly in the northern seas, but on a few occasions has been seen on the British coasts. It is especially useful on account of its ivory. The two tusks of the animal form the ivory."

A WALK ALONG THE SHORE.

AUGUST is a good time to visit the sea-side. Harry, George, and little Nell thought so too, and were merry enough as the train carried them a long way, by towns and villages, through fields, over rivers, across commons, even through the long dark tunnels. They grew a little tired, for the journey was long; but as soon as Uncle John said, "Look out of the window; there is the sea!" they forgot about being tired, and were bright and eager, as children are pretty sure to be.

"Oh, uncle, how delightful! Shall we soon get out?" cried little Nell.

"You must wait until the train stops, Nellie. We have not much farther to go," said Uncle John.

"We must take one walk along the shore before we go to bed to-night, uncle, though it is rather late," said Harry.

As for George, the sight of the sea made him poetical. He kept repeating lines and verses, keeping his eyes fixed on the sea all the time, with his face as bright as happiness could make it.

"The sea, the sea, the open sea!
The blue, the fresh, the ever free!
Without a mark, without a bound,
It runneth the earth's wide regions round,
It plays with the air, it mocks the skies,
Or like a cradled creature lies."

As soon as the train had arrived at its destination the children were impatient to go down to the rocks, so as to be quite near the sea.

"You are tired, and ought to be hungry," said Uncle John.

So they were obliged to wait a little time; but they thought more about the glorious sea than about their tea, and when once they had permission to go they walked and ran so quickly and eagerly that Uncle John had hard work to keep up with them.

"You dear, delightful old sea," said Nell, "I am very glad to see you."

The tide was coming in, and it seemed almost as if the sea were glad to see our young friends; for the great waves came booming up, almost like cannon thundering their welcome.

At least, so thought Harry.

"When I was at the review, and the guns were fired, there was not much greater noise," said he.

"What big, beautiful waves, uncle!" said Nell.

And so they were, and very grand they looked, as they came rolling on and broke on the stones with a dash and a roar, and the frothy foam flew up, carrying some of the pebbles with it.

Harry and George could not keep still for joy.

"What a very high tide, uncle!" said Nell.

"Yes, it is a spring tide. Spring tides are always highest."

"What are the low tides called, uncle?"

"Neap tides."

"What makes the difference?"

"The tides are affected by the sun and moon, more

especially the moon," said Uncle John; "and of course you know, Nellie, that they rise and fall about twice every twenty-four hours."

"I cannot think how the moon can do it," said George.

"It is thought that the moon's influence separates the drops of the water slightly," said the uncle, "and attracts them. Really the whole surface of the ocean is elevated twice a day. And when it is high tide here, it is also high tide on the opposite part of the world."

"That is strange," said Nell; "and oh, uncle, how the waves do come dashing in!"

"Yes, you can see one of the grandest sights in the world now—a good rough sea."

"Look at the little white foamy places all about."

"You see the wind is rough; it passes over the face of the sea and stirs it up."

"I love to feel the wind," said Harry. "The sea-breezes are the things to do one good."

"Yes, open your mouths and swallow as much as you can. This fresh air will give you an appetite for your supper."

"If it were not for the wind the sea would not look nearly as grand, would it, uncle?"

"Oh, no; it is the restlessness and ever-changing appearance of the surface that makes the sea so interesting."

"Uncle, is it true that the top of the water only is stirred?"

"Quite true, George. The deep mass of water underneath is still—the winds cannot touch that."

"These waves are very high."

"Yes, they rise about six feet."

"Then they are as tall as you are, uncle?"

"The tide is coming in rapidly," said George, who had amused himself by making lines on the shore, and watching the waves cover them.

"I should not care to be on one of those rocks out there just now," said Harry; "I should have to swim for my life."

"You would have to be a very swift and strong swimmer to get ashore through this sea," said Uncle John.

"We have swimming-baths at school," said George; "so we have both learnt to swim."

"That is right, boys. It is a very important thing to learn; you never know what may happen. I hope you may some day be so highly favoured as to save a life. You would be the happier for it ever after."

"Don't you think it a pity that the water is salt, uncle?" asked Nellie.

"I don't see that it would be so very much better," said Uncle John, "if it were fresh."

"Then, you know, we might drink it."

"Yes, but we have springs and rivers, with plenty of water to drink."

"And there is a filter made now, that can clear the water, and make it fit to drink," said Harry. "I have read about it."

"And salt is a very useful thing. We should not know what to do without it," said Uncle John.

"How do they separate the salt from the water, uncle?" asked little Nell.

"I can tell you that," said Harry, "because I have read an account of the way in which it is done in Scotland. They build a place on the shore, which they call a *saltern*, and divide it into two parts—the *fire-house*, and the *boiling-house*. The *salt-pan* is made of wrought iron, about fifteen feet long, twelve broad, and fifteen inches deep. The cistern is placed near, and the water runs through pipes into the pan. They get the water which is deepest down, because there is more salt in it. It leaves the mud or stones in the cistern, and flows into the pans. Underneath them a large fire is made. As soon as the water is luke-warm, some white of eggs, or the blood of oxen, is put in to clear it. As the water boils away, fresh quantities are put in, three or four times, and then they let the fire go out, and the salt, nearly dry, is at the bottom of the pan."

"And now," said Uncle John, "we have chatted enough for one evening, and had better return."

"But in the morning we will get up early and have a dip in the sea," said Harry.

LIGHTHOUSES.

ALL boys and girls who visit the sea-side will feel interested in lighthouses. Harry, George, and Nell delighted in walking on the pier at sunset. It was beautiful to watch the clouds grow crimson, and purple, and all sorts of colours, and feel the cool breeze come up. They loved to watch the sun, as it gradually went down and down, and at last seemed to dip in the sea. And directly they had wished that good-night, they looked out over the water towards the lighthouse, and waited until the bright light shone over, and made a white path all across.

“ I should like to go into a lighthouse,” said little Nell.

“ We cannot well go across the water,” said their uncle; “ but we will go into the harbour lighthouse, and perhaps the men there will explain to us about gas, and lime-light, and reflectors. George, who first built the Eddystone Lighthouse ? ”

“ Henry Winstanley, uncle. People tried to persuade him not to go, but he had great hope. So many vessels had been wrecked on the Eddystone Rock, that he determined to try; and, though it was hard work, they got it finished at last in the year 1696 ”

"Yes, but it was not strong enough," said Harry; "for, when a great storm came, it was all blown down. And the worst of it was, that Mr. Winstanley, and some men who had gone to the lighthouse to attend to some repairs, perished with it."

"Oh, that was very sad," said little Nell with tears in her eyes, "that such a brave man should be drowned even while he was trying to save the lives of others."

"Yes, it was sad," said Uncle John, "but it seems strange how Winstanley could have expected it to stand; it was not strong enough. But he had proved to the world that it was possible to build a lighthouse on the rock, and three years after Winstanley's edifice was destroyed, another was begun by Mr. John Rudyard, who kept a silk-mercantile's shop on Ludgate-hill. This was a better and a stronger building than the other, but it was made of wood. It could have stood some of the storms, perhaps, but unfortunately it took fire and was burnt down."

"What became of the people who were in it, uncle? were they burnt too?"

"No; it began burning at the very top, so the men had time to escape."

"Who built the present Eddystone Lighthouse?"

"A very clever person named Smeaton. It is seventy-two feet high, and is made of Portland stone, with an outer shell of granite. You have heard about the Bell Rock?"

"Oh, yes, uncle. We know the poetry about it," said Nell.

“ ‘Without either sign or sound of their shock,
The waves fell over the Inchcape Rock;
So little they rose, so little they fell,
They did not move the Inchcape Bell.’

The good Abbot of Aberbrothok had placed a bell so that people might hear it and keep their vessels far enough away from the rock. But wicked Sir Ralph the Rover cut the rope, and down fell the bell in the sea. But as he was coming back his own ship was blown on the rock and dashed all to pieces, and he was drowned.”

“Well done, Nellie,” said Uncle John, “and on that very rock there now stands a noble lighthouse built by Robert Stephenson.”

“And that is better than the bell?”

“Yes, for not a single vessel has been wrecked there since the lighthouse was completed. There is another remarkable lighthouse—the Skerryvore, and that has a revolving light.”

“Oh, I know what that is, uncle,” said George: “it moves round and round, and only shows its greatest light once every minute.”

“Yes, that is right.”

“How glad the poor sailors must be on dark nights to see the lights.”

“You know, sometimes there are dangerous places, like sands, when they can find nothing to build on, and then there are floating lights. There are also forty-seven lightships on the coasts of England and Ireland.”

“I should not like to live in a lighthouse, uncle.”

“No, Harry, I am sure you would not. It is a

very hard and a very lonesome life. The keepers cannot go out for long walks, and they cannot have visitors to see them. Sometimes they have books lent them, and you may be sure they are glad enough to read them."

"How many men do they have at one lighthouse, uncle?"

"If it is easy to get to and from it, two are enough. But they have four at the Eddystone now. When there were only two, one of them was taken ill and died. And the other could not leave his lighting duties to go across to the shore and tell the people. So he did the best he could, but it was such a trouble and fright that he never got over it. So now there are four keepers for all such places, and they take their turn at spending a little time on shore with their families. Only the one on shore must keep a sharp look out in case he should be wanted at the lighthouse. Those who remain there raise a ball every day to show that they are all right. If the ball is not hoisted, that means something is the matter, and the man on shore has to get into the boat and hurry off directly."

"They must be glad when it is their turn to spend a little time on the land."

"Yes, no doubt they are, George. But I think we ought to be glad that there are men willing to brave all the dangers and hardships of a life in a lighthouse, so that many lives may be saved."

RIDES ON THE SEA.

“ONLY sixpence each, uncle. Do let us go.”
 “You would perhaps be sea-sick, Harry.”
 “What! only going out in a yacht that little distance!”

“Oh, yes; it is possible.”

“Never mind, let us risk it.”

There was the yacht, with its sails flapping in the wind, and a smart flag floating from the top, just ready for a sail, as soon as a sufficient number of people were on board. And the sailors were running to and fro, first trying to persuade the ladies and gentlemen to get in, and then assisting them up the plank.

“Fine morning for a sail, sir. Beautifully calm. Just off, sir. Sixpence each! only sixpence each! Step in, ladies and gentlemen, step in!”

It was a temptation not to be resisted. Harry, George, and little Nell—with Uncle John, of course—walked up the plank and took their seats in the yacht.

Then several persons came round them directly. First a man crying, “A cord for your hats, gentlemen. Buy a cord?—only a penny each. Better buy one; the breeze is fresh; you may lose your hat out at sea.”

Uncle John bought cords for them each, and the man fixed them on.

Then came another. "Cigar-lights, gentlemen? cigar-lights? only one halfpenny a box."

But Uncle John did not like smoking.

"Smoking is a bad, dirty habit. Never smoke, boys," he said to his nephews. "Never begin it. Why should you make a chimney-pot of your throat?"

The boys laughed at this, but they made up their minds that they would never be smokers, which was a good resolution, and I hope they will not break it.

Then came a blind man with "Nice mellow pears;" and the sailors said that he had been a fisherman at one time, but, meeting with an accident at sea, he had lost his sight, and had now hard work to get a living. So they had some pears of the man, and Uncle John spoke very kindly to him, and told him of the land where there will be no more blindness or sickness.

Then the men shouted, and the sailors came running from all directions, to push the yacht, and get it afloat in the water. It was soon done, and away they went, up and down, meeting the breeze.

"Oh, it is delightful!" said George; "I hope we shall go a good way out."

But just at that minute the man changed the sails, and the boat sank much lower one side than the other; and many boys and girls began to feel rather frightened, George with the others.

"It is all right," said Uncle John; "you need not be afraid of the yacht tipping over. It is safe."

"I like to dip my hand down," said Nellie, "and feel the cool waters wash over me."

"I saw a picture of an Indian going over a stream on a bundle of reeds," said Harry: "he sat astride on it, with his legs dangling in the water. I should think that must have been cool."

"I wonder how you would like a ride in the Coracle," said Uncle John. "That is a good-sized wicker-basket, with a hide stretched over to keep the water out. The Ancient Britons used it, and some of the Welsh people have the same thing now."

"I think I should be afraid to trust myself in one of them," said George. "But that is not worse than a raft, and some men have just come all the way from America on a raft."

"What is a canoe like, uncle?"

"Sometimes it is merely the trunk of a tree, cut down the right length, and hollowed out in the middle."

"That is an easy way to make a boat, but I suppose our trees are not as large as theirs," said Harry.

"Did you ever see a gondola, uncle?" asked Nell.

"Yes, and a fine sight it is to see them moving along the water streets of Venice. Six people can ride in them, besides two rowers. The seats have a cover over them with windows and curtains, which they can take off and on just as they please. The seats are covered with plush, and the floor is carpeted. Outside they do not look very smart, for they are painted black, and look almost like hearses."

"A battle at sea must be a grand sight, uncle," said Harry.

"Perhaps it is," said Uncle John; "but a battle is always a terrible sight, whether fought on land or on sea, and all who love England should pray that wars may cease, and that God will give peace in our time. But I do not know how we should have got on all these years without our navy. As England is an island, of course the enemy must approach from the sea, so it is as well to have some good stout 'men-of-war,' in case of a hostile visit. But it is far better still to be friendly with all the nations of the earth, so as to have no fear of battle."

"Cromwell was the first to bring estimates for the support of the navy before Parliament," said Harry; "and he got a grant of .400,000*l*."

"Are not the oak-trees in the Royal forests preserved on purpose to build ships for the navy, uncle?" asked Nell.

"Yes, Nellie, and acorns are continually being planted that the supply may never fail."

"Ah! nobody can, beat our ironclads," said George.

"We must not be too boastful," said Uncle John. "It is better to wish that no opportunity may arise for a trial. We do not know the blessings of peace till war comes."

"Oh!"

It was such a cry of dismay that they all turned to little Nellie to see what was the matter. It was not much after all; only she had just noticed that they were approaching the shore, and was sorry that their ride on the sea was so soon over.

COLLECTIONS.

“UNCLE, shall I tell you what we have been talking about?” asked Harry, as soon as Uncle John came into the room one morning.

“Yes, Harry, if it is not a secret.”

“Oh, no. We had been wondering what we should take back to our friends as presents. You know it is not fair for us to come out to enjoy ourselves, and quite forget those at home. Last year we bought a lot of things, fine shells from the Indian Ocean, watch-stands made of spar, and so on. But we have found a better and a cheaper plan now. We are going to collect a lot of curiosities, and arrange them so as to look pretty and interesting, and take them to our friends instead.”

“A very good plan, Harry—that is, if we can make anything worth looking at.”

“Of course we shall do that, uncle, because we shall only pick out nice specimens,” said George.

“We are to have numbers of books full of seaweeds, and an aquarium for each of our friends.”

“Yes, we shall collect the things in the daytime, and arrange them in the evening and at other times, either when it is too wet, or we are too tired to go out.”

"It will be a good thing," said Uncle John, "because when you are away from the sea-side you can watch the creatures that you are so interested in now, and learn something about their habits."

"We must take bottles, and jugs, and cans with us every time we go down to the rocks now, and we shall soon get enough to fill glasses for the tables."

"I want to send mamma a little present by post," said Nellie. "Will you help me collect some very pretty specimens of sea-weed to-day? Then I will dry them, and stick them with gum on paper."

So they agreed that that should be the first day's work, and I should recommend any little readers who are staying by the sea-side to do the same.

"We need not collect any of these wracks, need we, Uncle John? they are so common," said Nell.

"But you know they are not common in London. Besides, some of them are very pretty and interesting."

So they looked out some nice specimens, and though they wanted to jump on the air-vessels which studded the wrack, and make them explode something like a very small gun, they did not for the sake of their collection. Next they found some specimens of the *Saminaria* or Oar-weed, a brown plant, with rather a long and very strong stem, so strong that it is sometimes used for making knife handles; with fronds, looking something like leaves, spreading out at the top.

"We need not take much oar-weed, because it is not as pretty as some others," said George.

"But I think they are all pretty," said Harry;

"and, whether they are or not, no collection will be complete without them."

"We must try to find out some Peacocks' tails," said George.

"That is a very pretty kind," said Uncle John; "but as it is uncommon you may search in vain for it. The likeliest place to find it is among the rocks. It may be found sticking to them."

"We must get some of this red weed, it looks so very pretty, and there is plenty of it."

"Yes, that is the *urceolata*," said Uncle John, "which means many tubes; and it is so called because it has seeds in little bags which look almost like little bottles filled with wine."

"We must get some of this coralline, too, uncle."

"Get all you can," said Uncle John; "and then this evening we will try to find out their names."

So they picked up pieces of light green, and dark green, red, purple, brown, sand-coloured, and indeed all kinds of colours. Some of them were large, strong pieces, that looked very much like old weeds, for they were very dark, almost black. And some were light and feathery, so small and delicate that they had to separate them very carefully lest they should break them.

Some were like sponge, and some like very fine thread or silk; some were like ribbon, and some almost like cabbage.

It was great fun to get them. They looked among the sand and shingle at high-water mark, and they clambered over the slippery rocks; but the most and

the best could be found on the top of the waves as the tide came in. So they waited, and when the wave turned over and tossed some of the pieces up, they hastened forward and tried to grasp them, and sometimes the water came over their shoes, and made them quite wet. At last George borrowed Uncle John's walking-stick, and with that he hooked some of it a little nearer.

"Now, let us go home and arrange them," said Nellie.

Of course they had to be washed and dried, and then very carefully they were fastened on sheets of white paper with a little gum. The boys tried to have one little bit of each kind, and I can assure you they took very great pains to make it look very pretty. On one page was a little delicate piece, and on the next something quite different, so as to have a great variety.

Then Nellie fetched a needle and thread, and stitched the pages together, and made a book of them, and they were sent away by post.

"Now we have all these left," said George; "let us cut some pieces of paper, and I will show you what we can do."

He had some scallop shells, and when the sea-weeds were stuck on the paper he cut them small enough to go inside the shells. He bored some holes through the soft part of them, and then through the paper, and fastened them with a string. Very pretty they looked; "quite good enough for presents," said Nellie. "And to-morrow," said Uncle John, "we will see about an aquarium."

AQUARIA.

“We will commence preparations for stocking an aquarium to-day,” said Uncle John to his nephews and niece.

“We must get plants as well as animals,” said George.

“Oh, yes. It has been found impossible to keep the one without the other. Plants possess the power of changing carbonic acid gas into oxygen. Animal life throws off a sufficient quantity of carbonic acid to poison itself. But it is proved that sea-water, containing growing *Algæ*, keeps pure for any length of time. Animal and vegetable natures help each other. A gentleman who had prepared a fresh-water aquarium, finding that, as parts of the plants decayed, the water became impure and the fish died, introduced some snails into his tank. These set to work and ate the substances which were doing the mischief, and he had no further trouble.”

“We must get sand, and shingle, and shells, and sea-weed, and put them into the aquarium, so that the fishes shall not know the difference between that home and the sea.”

“First, get a glass jar, and fill it with sea-water. Then put a frond of *ulva* in it. After a time there

will be little air-vessels on the sea-weed ; and then it will be fit to receive a sea-anemone."

Away went the children to search among the rocks, for it was low tide, and they thought they might find some remaining on the stones. They had not to search very long before they found a "mes," which, though it is not the most beautiful of sea-anemones, is yet very interesting.

"Now," said Uncle John, "drop it into this glass jar, and you will soon see it expand, and watch it crawl up the sides of the jar."

"I hope it will not die," said Henry.

"It is a very hardy one," said Uncle John, "and bears the hardships of travel and change better than any other."

"I should like to find a 'crass,'" said George.

"You must look in the shallows for that," said Uncle John.

Presently they found one spreading out its beautiful tentacles, or arms, and they watched it in the water before they attempted to move it.

"I remember," said Nellie, "that Uncle John once told us that the creature holds out its arms when it is hungry. Presently the waves will wash up a limpet or a crab, and then it will draw it near and paralyse it, and put it into its hungry stomach."

"Did you ever see such beautiful colours as the crass has? Grey, lilac, green, pink, scarlet, all the colours of the rainbow," said George.

"We must get a few little crabs, and drop into the glass with the anemones," said Uncle John.

"We must not let anything starve in our aquarium."

"Here are plenty of crabs," said Harry.

And he was right; there were dozens of them hopping about on the sand, going backwards and sideways, and looking like very strange creatures, as you know they always do.

"We must find some star-fish, and some shrimps, and prawns," said George.

And he went and spoke to a boy who was walking in the sea with the water just above his knees, pushing a net before him as he went.

"We want some of those," he said.

"You cannot eat them," said the boy, "until they are boiled."

"Oh, we shall not boil them," said Harry; "we are going to take care of them and make them very happy shrimps indeed."

They boy came out of the water bringing his fishes with him. They were springing about like grasshoppers, and looked very different from the shrimps that are brought to our table. They were not red or brown, but a dull colour, almost like a dirty white. Some of them were put into a glass jar, with the sea-water, and they seemed to like it better than the net.

"We must try to get some dead-man's-fingers," said Nellie, "and I cannot think why they give them such a disagreeable name."

"Now," said Uncle John, "our aquarium will not be complete without some shell-fishes."

"There are plenty of limpets out there on the

slippery rocks," said George. "You had better not venture there, Nellie."

But she could not see why she might not be as brave and fearless as the boys.

"Here are some limpets quite covered over with sea-grass, and different things; we must try to transfer them just as they are from their rocks to our bits of stones."

"They will soon crawl up the sides of the glass," said uncle, "and then you can watch it, and see what it is like."

"We must get some whelks too."

"There are plenty of them."

"And I shall try to find some of the pretty little cowries."

"Here is a shell, uncle, something like the whelk, only it is nearly white, with brown bands round it."

"It is the *Purpura*, which furnished the purple dye you have read about."

"We must get some *Tops*. They are such pretty shells."

But I cannot tell you all the different things they gathered for their aquarium. Uncle John bought a large glass vessel, large enough to stand in the middle of a drawing-room table. And very carefully they arranged their treasures, putting in a little bit of everything which would live, and help to make the collection look well. It was a very pretty sight, what with fishes and shells, and sand and pebbles, and sea-weed; and I would advise all our young readers to get one for themselves while they are at the sea-side.

UNDER THE MICROSCOPE.

“**Y**OU shall see some wonders to-day,” said Uncle John, “that will quite surprise you.”

“How is that, uncle? Will you take us out a long way in a yacht, or shall we spend the night in a fishing-boat?”

“Oh, no, George, we shall but examine very carefully a little sand and a little water.”

“Very interesting *that!*” said Harry.

“Stay a minute,” said Nellie; “uncle means something; I can see that by his eyes. Let me see if I can guess it. Have you a *microscope*, uncle?”

“Ah, Nellie, you have guessed rightly at first. Both the sand and the sea-water are full of interesting objects too small for us ever to see them without the aid of a magnifying-glass, but beautifully formed, and some of them of most exquisite colouring. George, give me a little of the yellow sand which you gathered for your aquarium, please.”

“Here it is, uncle; and it looks to me to be just grains of sand and nothing more.”

Uncle John put a little of it on one of the glasses.

“Now, Nellie, tell us what you can see.”

Nellie peeped in very curiously.

"Oh!"

"Well, what is the matter?"

"I never saw such little beautiful shells; all sorts, and many different shapes."

"Let me look," cried the boys both at once; and though, of course, they were polite enough to wait for their turn, and each wished the other to be first to peep at the wonders of the sand, they could not help feeling almost impatient.

"I should not have thought it," said Harry; "they are wonderfully beautiful."

"If I had known the sand was full of such pretty delicate little things," said George, "I don't think I should have jumped about on it as I have done. What hundreds we must crush every day."

"But there are hundreds more," said Harry, "so it does not matter so very much."

"What are they, uncle?" asked Nellie.

"They are the shells of the *Foraminifera*. More than a thousand varieties of these wonderful little things are known."

"How beautifully finished these shells are!"

"Yes; and yet there is great diversity in them. Some are made with only one hole—large, if anything can be large connected with such a minute thing. Some have more holes than we could count. Some have only one room, and in some the space is divided into several chambers."

"How did people find them out at all, uncle?"

"They were discovered by Beccaria, an Italian naturalist, in the sea-sand, not far from Ravenna."

"How surprised he must have been!" said Nellie.

"For a long time it was supposed that they were only to be found on the shores of the Adriatic Sea, but it has since been proved that there is no sand on any shore without them. A man, named Jonas Plancus, once counted eight thousand of these foraminifera in six ounces of sand. And D'Orbigny found 3,849,000 in a pound of sand from the West Indies."

"I am glad I had not the task of counting them," said George.

"There are other strange microscopic creatures called *Diatomaceæ*. These, instead of shells, are covered with a flinty coat. Look at them through the lens, they are all kinds of shapes. A very fine specimen may be found in May on the leaves of the *Zostera* and other sea-weeds. Wait a minute."

Uncle John was busy arranging a drop of sea-water so that they could examine it.

"Now here are wonderful little things—the sea is full of countless masses of *Infusoria*. It is supposed that if they were to die, the sea would soon be entirely emptied of all fishes."

"How could that be, uncle?"

"Because they furnish food to the inhabitants of the sea next in size to themselves; they are in their turn eaten by those larger still; and so on up to the very largest things that are found in the water. So you see everything that God has made is to supply a need; even the smallest animalcules are important."

"Oh, uncle, here are the funniest little things hopping up and down."

"We will call them water-fleas. They can be found in the holes, or cups in the rocks. None of them are larger than a pin's head, most of them much smaller. But they enjoy their little lives, as you can see by the merry way in which they hop about. They swim on their backs, and do not dart through the water as fishes do, but spring with a bound from the bottom to the top. They curl their tiny bodies up like a ball to get ready for their jump; then they straighten themselves suddenly and come to the top. But when they want to go down to the bottom, they move gradually."

"This has only one eye."

"No. But that is placed quite in the front of its head, and is very bright and sparkling, and is generally of a bright crimson colour."

"What is that little thing, uncle? It seems to be moving."

"That is a beetle. It is nearly always under the water. It is made like other beetles, and must therefore have air; and yet it is only uncovered by the water once or twice a month, when the tide is low."

"How does it manage to live, then, uncle?"

"If you look at it closely under the glass, you will see that it is covered with long fine hairs; and when it goes under the water, these hairs carry a little air with them, so there is a bubble of air all round it. And this little beetle runs no risk of being washed away by the tide, because its feet have long claws that can grasp tightly."

"It is all very wonderful!" said the boys.

"Sailors noticed that in part of the Arctic seas the water was very thick and darkly green. Well, it has been found that that appearance was caused by millions of very minute *Medusæ*, so small that they could hardly be seen without a microscope, but in such numbers that if all the people living were to try to count them they would not live long enough for the task."

It made the boys feel rather thoughtful.

"It is wonderful that such tiny things should be so beautifully made when there are such millions of them."

"Yes; but God has made everything beautifully. His marvellous power and skill are shown as much in these animalcules as in whales and sharks, and the large wonders of the deep; and I think we may learn two lessons from this chat—one is, that we need not be afraid but that God will take care of us, seeing that He provides food for even these animalcules; and the other is, that *we* should never think anything so little that it need not be done well."

THE DREDGE.

“UNCLE, I do believe we have found everything there is to find on the sands. If we could only borrow one of those things which I think you called a dredge, we might have some of the animals which are down at the bottom of the sea.”

“If we stay longer by the sea-side, I think, George, that you will find plenty of new things even on the shore; but we will try to get a dredge, and go out in a boat to see what we can find.”

The boys were very glad indeed to hear that. They delighted in boat-rides, and both George and Harry thought themselves very clever in the use of the oar. Have my little readers ever tried to row? If so, they know that it is not as easy as it seems, for the oars are made of strong wood, and are rather heavy for boys to hold; besides that, the strokes must be regular.

Uncle John got a dredge. It had double scraping lips, and a nice bag, made of stout twine, with the meshes not too large. The lips were to scrape up the things at the bottom of the sea, and the bag was to hold them. They rowed out a little way, and then the dredge was hove out, the boys holding the line.

They drew it along, and felt it rubbing the bottom, sometimes on the sand, sometimes over stones. After a time Uncle John and the boatman drew it in.

"Oh! what lots of things," said Harry.

"Here are animals enough to stock an aquarium," said George. "What beautiful colours some of them have."

"Oh, uncle! here is a splendid sun-star of a beautiful rose colour."

So it was. It was in shape like the usual star-fishes which are found on the shore. But the surface, which is convex—that is, raised like a globe—was dotted about with small white knobs.

"Here is a queer thing, uncle," said Nellie, who had been looking with wondering eyes.

"What is it like, Nellie?"

"Something like a crab, but it has such long legs."

"That is an angled crab," said Uncle John; "if we just touch him behind he will throw out his long limbs as if to protect himself. The creatures have a curious way of resting. They fold the forearm close, sticking out the elbow; the thighs are thin and blade-like, and all the limbs pack together very closely and neatly."

"Did you ever see one before, uncle?"

"No; they are not very commonly found on shore, unless they are washed there by a very heavy storm. They make holes in the hardened mud, and their habitations are said to be opened at both ends."

"Here is a pretty little crab, uncle."

"That is the nut-crab. If we touch it, it folds its little legs close on itself, and remains quite still, trying to hide itself in the gravel."

"Here are some urchins; what curious things they are, covered with spines."

"The sea-urchin is covered with a substance formed of limestone, not in one piece but in several hundred pieces, and these shells which look only like one coat, grow as the animal grows. Its rosy-tipped spines or bristles are very curious things."

"What is this, uncle?"

"That is a sea-cucumber. You see it is something like that vegetable in shape. But when it feels quite at home in our aquarium it will put out a beautiful 'coronet of plumes.'"

"Here is another star-fish, but not like the other, for this one seems all legs."

"That is the granulate brittle-star, and a very fine creature it is. It has a brown body, and long sprawling legs. The disc, that is the centre part, which is something like a cushion, is, as you see, of a brown sandy colour. These rays, that look something like legs, are of a rich reddish brown, and they are covered with little spines. The brittle-star seems to move along by means of its rays."

"These things are something like leeches."

"They are suckers. Their fins are so formed as to enable them to stick tightly to any solid substance they come in contact with. You see they are pale-brown coloured. They are called two-spotted suckers, because they have two peculiar spots, one each side of the body."

"What bright eyes!" said Nellie.

"Yes, the eyes are very beautiful. The pupil is a deep green, the iris is almost a gold colour, and it is set in what looks almost like glass."


"I hope they will live in our aquarium."

"They will, George; and as they are very merry, active little creatures, they will afford you a great deal of amusement."

I cannot tell you of all the things which the dredge brought up. Some of the things which were too large, and not particularly pretty, were thrown overboard, but the others were carefully picked out and placed in jars, and taken home to be looked at, and watched, and admired, not only during this sea-side visit, but all through the winter. I hope that all boys and girls able to understand zoology will not come away from their holidays without having learnt something, and being determined to learn still more. The study of animals is always interesting, and the more we examine the wonderful works of God, the more we shall see to fill us with awe and admiration of His great skill and power.

Even the things that are hidden under the sea are as beautifully made as those which are where our eyes always can see them. And I can tell you that you will look back upon your visit to the sea-side with all the more pleasure if you take some specimens of it home with you, to remind you of your happy holidays.

DANGERS.

“ HAVE been thinking, Uncle John,” said George, one morning when the weather was stormy and the sea rough, “what dangerous lives people live who are on the sea.”

“Sometimes they go out, and never return,” said Harry; “the storm comes, and their boat is upset, and they are lost, and never heard of again.”

“How sad for the poor women who stay at home, and expect them, and watch for them,” said Nellie.

“Very often the fishing-smacks are seen in distress by the brave life-boat crew, who go off, and bring the poor fishermen back safely to their friends.”

“I should like to belong to the life-boat crew,” said George; “they are such brave fellows; and how good it must be to risk one’s life to save another’s!”

“It is the highest kind of bravery,” said Uncle John; “it is a thousand times better than a soldier’s life. People talk about the heroism of a battle-field. It is surpassed, I think, by many a sturdy fisherman, who goes through the storms for his children’s sake; or the life-boat man, who dares to go where none may follow, not to take life, or to get honour, but to rescue a drowning creature and bring him safe to land.”

"Have you ever heard," asked Harry, "what risks the Orkney Islanders run to get food?"

"Tell us about it, Harry," said George and Nell together.

"There is a tremendous rock called the Holm of Noss, about a hundred feet from the Isle of Noss.

he cliffs are very high and rugged, and between the two the sea boils, and roars, and foams, so that you could not look down. But the islander goes out in a little boat, taking one or two with him, and he leaves them at the bottom of the cliff while he climbs to the top. There is a little earth on the top of the rock, and into this he drives some strong stakes. Then he goes down the rock and up the other, where he fixes some more poles. Then he stretches a rope across from one to the other, puts a basket on it, and fastens the rope securely. Then he gets into the basket and moves himself to and fro by means of a line."

"And what does he take all that trouble for?" asked Nellie.

"To get the eggs and young of sea-birds. There are large numbers of guillemots and gannets on these rocks, and the people who live on the islands are glad to eat them either fresh or salted during a great part of the year."

"I wonder if the eggs are nice," said Nellie.

"You would not think so," said George. "I have heard that they have a very strong fishy taste."

"Some fowlers have even greater dangers than these," said Uncle John. "Sometimes the cliffs are very overhanging, and eleven or twelve hundred feet

high. Half-way there are numbers of birds. Men go to the top of the rocks and make a strong rope of hogs' bristles or straw."

"Why not have a proper hempen rope?"

"Because the friction of the rope over the sharp edge of the rock would cause it to be so much the sooner cut asunder. When the rope is made they fasten it round the body of one man, and let him down five or six hundred feet. He has a pole in his hand, and a basket or bag tied round his waist. He has a thick cap on his head to protect it from the pieces of rock which are sure to be loosed by the rope. But even his cap does not always save him; sometimes he is dashed to pieces by large masses falling on him."

"Oh," said Nellie, "it does seem hard that people should have to run such great risks to be able to get a living."

"When he gets to the place where the birds are he puts his feet against a ledge, and sometimes darts into the air so as to get a peep into the holes where the birds are nestling. He only takes the eggs and the young. The birds are fond of living in caverns. But the only way the man can get into them is by unfastening himself from the rope, and holding it in one hand or fastening it to a corner."

"I have read," said George, "of a man who was out by himself, and who went into the cavern with an end of the rope in his hand. He was so busy collecting that he let it slip out of his own hand, and it swung away out of his reach directly. He was so frightened that he did not know what to do. But he

prayed to God, and went to the entrance of the cave, and the next time the rope swung towards him he sprang out into the air, and caught the rope, and was safe."

"Oh, if he had missed it then he must have been killed."

"Sometimes, instead of being let down, they go up. The best climber is chosen, and he goes up, while his friends push him from behind with a pole. As soon as he gets to a place where he can safely stand he pulls up another man, and so they go on higher and higher until they reach where the birds are. Sometimes they stay for days and nights in these caverns."

"Oh, uncle," said George, "I am so sorry for the poor fellows. I hope I shall never have to get my living in such a dangerous way."

"I hope not, my boy," said his uncle. "But it is well for you to know what dangerous lives many have to live, so that you may feel sympathy and kindness for them. I wish all these sailors and fishermen were Christian boys and men, because then they would never go out without asking God's blessing on their efforts. But you, my dears, may remember them when you pray, and when you sing your hymn :—

"O Trinity of love and power,
Our brethren shield in danger's hour;
From rock and tempest, fire and foe,
Protect them whereso'er they go.
O hear us when we cry to Thee
For those in peril on the sea."

CURIOUS CRABS.

“**H**, uncle, do look what a number of little crabs there are on the sands to-day, and how quickly the little creatures walk!”

“Not so rapidly as some crabs do, George. I have heard of young sailors running races with a species called the Sona Crab, and being beaten by the little things.”

“Not in our country, I suppose, uncle?”

“No, Harry, in tropical countries. They have the sands for their race-course, and I should think they feel rather ashamed of being beaten by so small a thing as the crab. These crabs burrow holes in the sand during the summer, but when winter comes on they go inland.”

“Just as we do,” said Nell.

“There is a very curious burrowing crab found in the Coral Islands of the Indian Seas,” said Uncle John. “It is called by the natives ‘Ou-ou.’”

“What a funny name!”

“It is also called the cocoa-nut-eating crab.”

“Does it live on cocoa-nuts, then, uncle?”

“Yes, George, when it can get them it does; for this crab is very fond of that fruit.”

“He must be a sensible fellow,” said Harry, who

was something like the "ou-ou" himself in his fondness for cocoa-nuts.

"But crabs live in the sea," said Nellie; "and unless a ship laden with cocoa-nuts should be wrecked within easy distance of the crab's home, how can he procure his favourite dainty?"

"I told you it lived on an island."

"Oh, yes, a coral island."

"Those islands, you remember, are most wonderfully formed by the little coral insect. They lay a strong foundation at the very bottom of the sea, and year by year it increases in size and height, until the building rises above the surface of the sea. Then the waves wash over the island, and shells and sea-weed are left upon it, all helping, as they slowly decay, to increase the size of it. Sometimes little holes are made by the action of the waves on the rocks, and so lakes are formed, just as you often see on these rocks. Then, either washed by the sea or carried by birds, come all kinds of seeds to the islands, and, among the others, the seed of the cocoa-nut tree. These take root, and so in the course of years there are cocoa-nuts for the crabs who like them."

"How does the 'ou-ou' manage to get the kernels, uncle? He surely cannot crack the hard shell."

"You know the cocoa-nut has three holes at one end. The crab selects one of them and gives it some hard raps with his claw until it is broken. Then into the hole he puts his long narrow nippers, and so manages to draw out all the goodness—that is, the oil and sweetness of the nut."

"What a clever little creature!"

"Besides that, the crab succeeds in getting the cocoa-nut fibre, which he claws or combs until it is tolerably fine, and then he lines his habitation with that."

"And a very snug bed it makes, no doubt," said George.

"But his labour is often in vain. For the people who live in these islands, knowing his habits, go to his home, and rob him of the well-preserved fibre, which he had so carefully hidden."

"That is very much too bad," said Nellie.

But the boys did not agree with her. They thought crab-hunting must be great fun.

"So it is," said Uncle John. "The hunters bind them up with strong cords made of the cocoa-husk, and the crab often snaps even that asunder in his efforts to escape."

"They ought to let him go when he is such a persevering, clever little thing."

"In the West India Islands there is a curious creature called the Land Crab. He finds a solitary place, and digs his hole in the earth. At the spawning season they all go down to the sea. They are something like the ants you have read of which go straight on, stopping for nothing. They go over walls, and stones, and trees, up and down the hills, stopping for nothing, but crossing over everything that happens to be in their way until they get down to the sea."

"What a sight it must be!" said George. "How I should like to see such a troop of soldiers!"

"They meet one another on their way, and the stragglers hasten to join the others, so that quite a grand army is formed by-and-by."

"What a chance to catch a good number of them!"

"Yes, the natives watch for them with great glee, and have what they call a crab-feast. But it is not very easy to catch them; they are wonderfully active creatures, and seem as if they understood and knew how to avoid the enemies who are looking for them."

"I suppose there are no very curious crabs in our land, uncle?"

"Well, I think there are, George. There is the Masked Crab, with very short legs and long arms. Then there is a tiny crab about as large as a good-sized pin's head. The cod is very fond of this little mite of a thing, for fishmongers often find large numbers of it in the cod's stomach."

"And there is the shaggy, flat crab which I have found," said Harry.

"Yes; and that is a crab which has many peculiarities. For one thing, he has been described as being always dirty, and covered with mud and sandstone. But though he is so dirty, he has a brush with which he keeps some parts of his body clean."

"And I am sure the Hermit Crab is a great curiosity," said Nellie.

"So it is," said George, "and we will agree that though we have not *all* the wonderful things on our English coasts and in our seas, yet we have quite enough to yield us matters for surprise and instruction."

WEAPONS, OFFENSIVE AND DEFENSIVE.

“H, uncle, what do you think I have just read in the newspaper?”

“Indeed I cannot guess, Harry; so perhaps you will tell me.”

“There have been some sharks caught on our coasts—as many as five in a week: two at Hastings, and two at Folkestone, and one at Margate. Of course it is very unlikely that all have been captured; no doubt there are others in our seas.”

“I should not like to bathe at either of those places,” said Nellie, “for I might be snapped up by one.”

“Yes,” said Uncle John, “we would not like the formidable teeth of the shark to be a common sight on our shores; so we will hope that they will soon swim back again to their native countries.”

“Sharks are not the only creatures living in the sea which have power to injure us, are they, uncle?”

“By no means. There are plenty of others, small and pretty-looking, that are not easily handled.”

“Have you ever seen a Portuguese man-of-war, uncle?” asked George.

“Oh, yes. They sometimes come to the coasts of Cornwall and Devon, and may there be captured. But if you wish to see them in all their beauty,

you must see them sailing along in the open sea."

"How large are they, uncle?"

"They differ very much in size; some of them are only about an inch in length, and some are as large as a good-sized toy-ship. It is a tough, oblong bladder, which, being filled with air, floats along on the top of the water. The part which looks like the sail is a beautiful pink colour, in stripes, so as to look almost like fringe; and the other parts—that is, the hull—are purple and blue, and crimson and green. Attached to the bottom of the bladder there are numbers of long, fine threads."

"The Portuguese man-of-war has some good weapons of defence, has it not, uncle?"

"Yes; as soon as I attempted to touch one the sailors and fishermen all called out to warn me. A gentleman, Mr. Bennett, once purposely seized one, wishing to know the extent of its stinging power. It wound its long threads about his hand and finger, and inflicted such severe pain that he could scarcely bear it. Yet the tentacular stuck to him so tightly that he had greatest difficulty in removing it, although the stinging continued so long as the least particle remained. The pain extended to the arm and shoulder, and was even felt throughout the entire body. It was something like a severe attack of rheumatics. Large blisters were on the skin which had been stung, something like those caused by the stinging-nettle."

"I would rather not have anything to do with it, if that is how it serves people," said Harry.

"There is no doubt but that this power is of great use to the man-of-war in enabling it to secure its food. Sea-anemones have also weapons of offence, which they use for the same purpose. Their skin has a number of very small holes, out of which they can send strong threads, almost like wire, with which they pierce the soft bodies of creatures which they wish for."

"I suppose there is some other animal which in its turn attacks the anemone?" said Harry.

"Yes; the eolis has been seen to do so with very great determination, gnawing holes in the anemone, and injuring, even tearing away, its tentacles."

"The lesser weever has also a serviceable weapon, has it not, uncle?" asked George.

"Yes; this little silvery fish, with large head and mouth, has a short fin on his back, on which are stout, sharp spines, which can inflict very severe wounds, which are very difficult to heal. It is called sting-bull, sting-fish, and sea-cat, because of its power of injuring. The fishermen cut off these spines as soon as possible. In Spain and France there are laws compelling them to take this precaution before offering the fish for sale."

"Is the weever used for food then, uncle?"

"Oh, yes; its flesh is considered very good!"

"How large is it?"

"The lesser weever is about five or six inches in length. The greater weever is, of course, larger."

"There is another strangely armed little fish, called the father-lasher," said George.

"Called also the lucky proach," said Uncle John;

"a very sharp-looking little fellow, bristling all over with weapons."

"His spines are as sharp as needles," said Harry ;
"so I should think the fishes that engage in war with him are not likely to be very successful."

"Have you ever seen a sea-hare?" asked Uncle John.

"What is it like, uncle?"

"It is really one of the sea-slugs, and is a very curious creature. It has a pair of erect tentacles, which look like a hare's ears. It is about three inches long, and an inch high. It is slimy, like a slug, and its colours are dark, olive-green, or red-brown, or deep purple. If we drop it into a bottle of water it pours out a beautiful purple liquid. People have tried to use this as a dye, but the colour fades and changes in a short time. It is said that the sea-hare throws off a fluid which is highly poisonous, the smell of it so affecting persons as to make them feel sick and ill."

"How strange that such little things should have the power of making so much discomfort," said George.

"At one time this sea-hare was used in the preparation of poisons so frequently, that a man who appeared particularly interested in the slug was liable to be suspected of having designs upon somebody's life."

"I wonder what those people would have thought of us, who are always searching for curiosities," said Harry.

THE TORPEDO AND THE ELECTRIC EEL.

“ARE any electric fishes found on our coasts, uncle?” asked Nellie, when she was walking on the shore with Uncle John.

“Yes, Nellie, the torpedo is found on British coasts, though only seldom.”

“What kind of a thing is it?”

“The head and body look like a thick, round lump; it is very broad, considering its length. It has very small eyes; its mouth is also small. It is about four feet in length, and weighs from sixty to eighty pounds.”

“It has a very strange electrical power, has it not, uncle?” asked George.

“Yes, and in consequence of that it is called the cramp-fish. The Arabic name for it is the lightning-fish, which proves that the Arabians knew something of the nature of thunder and lightning.”

“The torpedo possesses the power to give out electric shocks, then?”

“Yes, and very powerful ones too, so as to numb the hand and arm of the person who touches it.”

“In what part of the fish is the electric apparatus, uncle?”

“In the surface of the sides of the animal, reaching

from the fore part to the middle of the fish. These organs are about a fourth part of the fish in length; they are thicker in the middle, and thin at the edges. They are fastened by fibres to the other parts of the body, and are covered by the common skin of the fish. These organs contain a great number of nerves; and it is supposed that the electric power is produced by the action of these."

"Does it always give out a shock when it is touched, uncle?"

"Not always. The animal must be irritated before it communicates it. It moves its pectoral fins in a trembling, convulsive manner previous to throwing out its electricity."

"Must there be actual contact, uncle, or is it only necessary to be near the torpedo?"

"If you wanted to receive a shock, Harry, you must actually touch it. If you wanted to be moderately influenced, you could touch its breast; if you had no objection to a good strong shock, then you might lay your hand on its back."

"Does it always keep its battery ready charged?"

"No; but it can charge its organs very rapidly, and give out a large number of shocks. These are most powerful when the animal is laid on glass."

"It must be rather a formidable animal to kill."

"The slightest injury done to the brain of the animal robs it of its electric power. When it is being killed the shocks are much less strong, but are very frequent, as many as forty or fifty being given in a minute."

"Is the electric action of the animal involuntary, uncle, or can it be produced at will?"

"It is supposed to be a voluntary action, because the shock is not always given out when it is touched. The torpedo is very much more powerful in its action in warmer countries than on our own coasts, and all other fishes having electric powers are found where the climate is much warmer than it is here."

"Where is the *electrical eel* found, uncle?"

"The electric eel, or *gymnotus electricus*, is found in Guiana, in South America. The powers of the electrical eel are even more wonderful than those of the torpedo."

"Is it really an eel, uncle?"

"Well, it is like one in shape, only its body is larger round in proportion to its length."

"I suppose it lives in the rivers?"

"In the muddy parts of them, and in ponds, and muddy places generally."

"They are fond of burrowing in the mud, then?"

"Yes; and therefore it is not very easy to catch them. They cannot be taken in nets, or by lines."

"They are very large creatures, are they not, uncle?"

"Yes; there have been tales told of electric eels measuring twenty feet in length. But they are exaggerations. The very largest is only about five feet."

"Quite large enough too, I should say," said Harry. "Where are its electric organs, uncle, please?"

"There are two on each side, a large one near the

back, just under the skin, and a smaller one near the fin. They reach nearly to the end of the tail, and about a third of the whole fish is occupied by them."

"Are these organs anything like those of the torpedo?"

"Yes, very similar, and very likely the greater power of the electric eel is due to the larger size of these organs in that fish, as compared with those of the torpedo."

"The shock is the strongest, I suppose, uncle, if the fish is held?"

"Yes, mere contact will produce a shock, but if it be pressed it is much more violent."

"How do the other fishes like the electric eel?"

"Not at all. They kill all kinds of fishes. Even the alligators have no chance beside the gymnotus, they are stunned before they have had time to bite. No fish can live in places where the electric eels are abundant. They are very greedy creatures, but they kill more than they can eat, and it is supposed that several are destroyed with one shock. Even large animals can be very much injured by these gymnoti."

"I have read Baron Humboldt's account of the way in which he captured some of these electric eels," said George.

"Tell us about it," said the others.


"He found that he could not take them by means of nets, or hooks, or other methods of fishing, so he had a lot of horses, about thirty in number, driven into a pond which contained an abundance of these gymnoti. Some Indians were employed to shout and frighten the horses, which plunged and dashed about

the mud of the pond, until the eels must have wondered what it all meant. Finding, however, that their camp was invaded by such a powerful enemy, they immediately prepared for battle, and resisted the attack on their territory with great determination. The horses, so soon as they felt the shocks, tried to escape; but as they were driven back the eels had good opportunities for displaying their powers. Some of the horses were so completely stunned that they sunk down in the water, and were drowned or killed in a very few minutes. The eels knew how to do it, for they laid their whole lengths on the most delicate parts of the horses."

"The larger the part which is touched by the eel the stronger is the shock," remarked Uncle John.

"The horses that were not killed," continued George, "were so exhausted and terrified that when they came out of the water they could scarcely stand. But the gymnoti had suffered, too; they were so tired that they were drawn out of the water, and had no power to give their captors the usual electric shock."

THE LAST WALK BY THE SEA-SIDE.

UR little friends, Henry, George, and Nellie, could not help feeling sorry when the time came for leaving the sea-side and going back to their home, and school, and work. I dare say all my little readers who know how joyous it is by the sea-side, and what glad times holidays are, feel the same.

"I should like holidays to last all the year," said George.

But Nellie replied, "No, George, you would not, because everybody must work to be of any use in the world."

And Harry said, "It is because we cannot get holidays always that we enjoy them so much when we can have them."

"Let us have one more walk by the sea, please, uncle," they said on the morning before they came away.

And though it had been raining, and the skies looked dark, and the wind was rather strong and cold, Uncle John took them down to the shore.

"I hope the sea will not be angry this winter," said Nellie; "I hope there will be no wrecks."

"That could not be," said George. "Every year there is a wreck chart published, and people can see

for themselves what numbers of good ships and brave seamen go down under the waves."

"Cannot it be helped?" asked Nellie.

"Not often," said Uncle John. "All is done that can be in some cases which are fatal after all. We have numbers of lighthouses, both fixed and floating. We have also, as you know, a noble fleet of lifeboats round the coast, and plenty of brave men willing to man them, and go off through the boiling waves at the sound of the signal-gun or the sight of a ship in distress. But it needs a stronger and wiser Friend than even these men to save all the lives that are trusted to the waters: only God could do that."

"I will tell you what we can do," said Henry, "to make us remember this visit to the sea-side. We can say one prayer every day for sailors and fishermen, and perhaps God will hear us, and take care of them."

"That is right," said Uncle John; "we can all do that, and we cannot tell but that good may come of it."

So one good resolution was formed.

"We must take care of the fishes, and shells, and sea-weeds, which we collected for our aquarium," said George.

"Yes," replied Uncle John; "nothing prospers if it is neglected. And, although it will not promote the health and happiness of the little marine creatures to be very often moved about and changed, they will want proper attention."

"I hope our sea-anemones, and sea-urchins, and dead man's fingers, will all live," said Nellie.

"And I hope the little crabs will grow into big ones," said George.

"And I hope we shall come down here again next summer," said Harry, "and make collections, and enjoy ourselves just as we have done this year."

"And since you are all expressing your hopes," said Uncle John, "I hope you have learnt some lessons at the sea-side which you will not soon forget."

"What are they, uncle dear?" asked Nellie.

"Supposing you try and find them out," said Uncle John.

"This is one," said George, "that all God's works are wonderfully and beautifully made."

"Yes," said Uncle John, "that is right, George. So well are they made that even the wisest and cleverest man could not possibly improve any of them."

"Another lesson," said Harry, "is that God has filled the waters with abundance, that we may be fed."

"Ah," said Uncle John, "to be sure of that we have only to think of the Yarmouth herring fishery at the present time. Many thousands of those little fishes are just now passing down by the eastern coast; and though hundreds of men are employed in catching them, and though barrels of them are cured for winter consumption, it does not seem to make much difference to the shoals which are still left, so that for many generations to come people may eat as many herrings as they please, and still there will be plenty left."

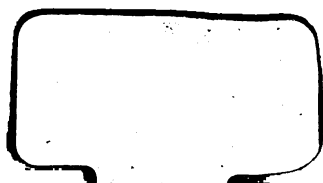
"Another lesson, I think," said George, "is that food is made for every one of God's creatures; for in the sea nothing is left unprovided for. Just where a fish lives, there is also to be found the food which it most likes."

"Cannot Nellie think of a lesson?" asked Uncle John.

"Yes," said Nellie; "I think we may learn how wonderful is the power and love of God. Though He has made such heaps of waters, He holds them back in their places, so that they shall not flow over the land and drown us. And though He has so many things to take care of and provide for, even great whales and such things, yet He does not forget even such a tiny thing as a shrimp or a water-flea. And so," said Nellie, simply, "I am quite sure that He will take care of us all the winter."

"Yes," said Uncle John, "and there is one more that I will remind you of. It is this. Everything which God has made has work of some kind to do. None are quite idle or useless. And boys and girls are no exception to this rule. So if they do not do their work, whatever it may be, willingly and diligently, they are worse than even the fishes."

"Let us try to do our very best," said Harry; and I hope all our little friends will say the same.



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